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A REVIEW OF THE GENUS CYRTOPOGON LOEW IN NORTH AMERICA (DIPTERA–ASILIDAE)

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In the present paper on the genus *Cyrtopogon* Loew, 16 species and 2 subspecies are described as new, and a key to the known North American species is given. The rapid increase in our knowledge of this genus in recent years, through the description of numerous species by Cole, Curran, Melander, and Bromley, has made this revision desirable. To illustrate this development, of the 35 species in Back's monograph of 1909, 6 have been transferred to other genera and 2 are now considered synonyms. Likewise, of the 48 species included in Melander's key of 1923, 6 have been transferred to other genera and 4 are now considered synonyms; this the latest complete key therefore contains only 38 of the more than 60 species now known. Curran, in 1923 and 1924, described numerous new species, mostly from Canada, but gave keys to the Canadian species only.

The disposition of the various species formerly placed in *Cyrtopogon* is as follows: *Eucyrtopogon* Curran includes *C. nebulo* O. S., *C. maculosus* Coq., *C. varipennis* Coq., and *C. punctipennis* Mel. *Nannocyrtopogon,* erected by the writers and to be described else-

where, includes *C. cerussatus* O. S. and *C. nigricolor* Coq. *C. gibber* Will. is eliminated from the genus, as an examination of the type at the University of Kansas shows it to be a true *Metapogon*. Species now given as synonyms are: *C. cretaceus* O. S., *C. positivus* O. S., *C. albitarsis* Curran, and *C. tacomae* Mel.

When this paper was begun, more than three years ago, a key to the then known species was prepared, and attempts were made to build up a large collection by collecting and exchange. Although large series of many of the Western species were obtained by collecting, only a few of the Eastern species could be obtained by exchange, the species apparently being rare or absent in most collections. The collection on which this paper is based, although lacking in several of the Eastern and Canadian species, is undoubtedly one of the most complete ever assembled.*

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In the case of doubtful species, we have received very kind cooperation from the institutions where the types are on deposit.

Although only a few of the European species have been available for comparison with the American forms, close relationships have been noted between *C. vulneratus* Mel., and related species, and *C. ruficornis* Macq. (the type species of the genus) ; between *C. leptotarsus* Curran, and related species, and *C. flavimanus* Meigen ; between *C. lutatius* Walker, and related species, and *C. lateralis* Fallen ; and between *C. bimacula* Walker and *C. maculipennis* Macq., the latter species having been reported recently from Canada.

Although the genus is found over most of North America north of Mexico (no species have been recorded from Mexico as yet), it is more particularly abundant in the northern and western parts. Osten Sacken (West. Dipt., p. 294, 1877) remarks as follows on the occurrence of the genus in California : "The large number of species of this genus occurring in California is very remarkable. While only ten or eleven species are known from the whole of Europe, I found thirteen species, eleven of which were new, almost all on the same day, near Webber Lake, Sierra Nevada." In numbers of species, California is only rivaled by Oregon and Washington, with British Columbia and Idaho closely following.

The great bulk of the species are taken in or near coniferous forests, usually alighted on the ground, on logs, on twigs, or on the trunks of trees. *C. auratus* Cole is almost always found above the ground on the trunks of conifers, while the closely related **C. auripilosus,** n. sp., most frequently rests on the ground. *C. rejectus* O. S. is usually found several feet above the ground on the trunks or out on some of the lower branches, often perching just out of reach of the net. *C. praepes* Will. and its close relative *C. willistoni* Curr. are usually found in the grass beneath conifers. **C. albifrons,** n. sp., seems to prefer to rest on rail fences rather than on the nearby tree trunks. A few species are found outside the coniferous area ; *C. anomalus* Cole, while often found within the coniferous area,

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seems to be associated with cottonwoods and willows; it is usually found close to running water, perching on stones, dead branches, sticks, or driftwood. **C. idahoensis,** n. sp., is collected on sand near willows along running water, although not so close to the water as is *C. anomalus.* Several species are taken in the open desert, *C. ablautoides* Mel. being an example. A number of species are found only at low elevations, while a still larger number are found only in the higher elevations; a few species (e.g., *C. montanus* Loew and **C. banksi,** n. sp.) occur in both places, coming out early in the spring in the lowlands and appearing later in the summer in the mountains. Many of the species are difficult to capture, this being especially true of the larger species, such as *C. dasylloides* Will. and related species.

Most of the species can be collected at any time of the day if the sun is shining, but larger series can usually be taken late in the morning or early in the afternoon. *C. glarealis* Mel. is found in abundance only in deep pine woods very early in the morning and late in the evening.

Nothing appears to be known of the biology of the American species and but little is known of the European forms. Melin[1] has published on *C. lateralis* Fallén and a number of other Asilidae, and the reader is referred to this paper, as an edition in English is available.

Several species have been noted performing a mating dance. *C. glarealis* Mel. is found mating in sunny spots on the trunks of trees, not more than 3 feet above the ground, on fallen logs or branches. The male begins the courtship by alighting in front of, and facing the female. Sometimes he remains quiet for awhile, but at other times he immediately begins to lash his abdomen, raising it almost perpendicular to the thorax with the last three or four segments curled downward, and then suddenly straightens it. This movement continues for several minutes. Sometimes the females show a slight response by the quivering of the wings. The courtship is ended by the male suddenly pouncing on the female and attempting copulation.

The males of *C. auratus* Cole also take a position in front of the female but do not lash the abdomen; instead, they wave their ornamented forelegs in a more or less rhythmic motion. On several occasions the males were observed to approach the females and stroke

[1] Melin, D. 1923. Contributions to the Biology, Metamorphosis and Distribution of the Swedish Asilids. Zoolog. Bidrag. Uppsala, VIII, 1–317, 305 figs.

their head or thorax with the front legs. The males of *C. montanus* Loew also stand in front of the female during courtship. Wing movement seems to be the major part of the courtship, at times a low buzz being produced by the wings.

The most useful characters for the separation of the species are to be found in the ornamentations and modifications of the males. Osten Sacken (West. Dipt., p. 294, 1877) has commented on these as follows: "Another remarkable fact is the peculiar ornamentation of some of these species, especially of the legs of the males, which, as far as I am aware, does not occur in Europe." One European species, *C. flavimanus* Meigen, has the last joint of the male fore tarsi extremely flattened as in the American species related to *C. lineotarsus* Curran. Other modifications of the legs are found in the males of *C. princeps* O. S., **C. vandykei,** n. sp., *C. perspicax* Cole, and **C. basingeri,** n. sp., all of which have the fore tarsi very long and slender, in most cases one and one-half times the length of the fore tibiae. The most striking leg ornamentation is found in the pad of black hairs on the last two joints of the middle tarsi of *C. callipedilus* Loew and related species, and in the fringe of silvery hairs on the fore tarsi. Other species which have fringes of white hairs on the fore tarsi are *C. pulcher* Back, *C. glarealis* Mel., *C. dubius* Will., *C. rufotarsus* Back, *C. princeps* O. S., and **C. jemezi,** n. sp. A few species, as *C. princeps* O. S., *C. inversus* Curran, *C. dubius* Will., and **C. aldrichi,** n. sp., have prominent white hairs on the hind legs.

Modifications other than on the legs are found in a few species. *C. aurifex* O. S. and related species have dense tufted orange pile on male abdominal segments 2–4; and the males of *C. maculipennis* Macq., *C. bimacula* Walker, and *C. dasyllis* Will. have large brown spots in the wings which are faded or absent in the females. Remarkable modifications in the pollinosity and pilosity of the abdomen are found in both sexes of the species related to *C. vulneratus* Mel. and *C. dasylloides* Will.

In the rather large group of species which have the scutellum more or less flattened and pollinose, male sex ornamentations are almost wholly lacking. In this group the most useful characters for separating the species are to be found in the pollinosity of the abdomen; the color of the legs; the color of the hairs of the mystax, scutellum, hypopleura, and legs; the color of the claws; the gibbosity and width of the face; the pollinose pattern of the mesonotum and pleura; and the shape of the third antennal joint. This last character is quite constant in these species, even though in many cases the

antennae are somewhat distorted on drying, so drawings have been prepared of the antennae of most of these species as an aid to their identification.

The genus is defined briefly as follows:

Cyrtopogon Loew

Cyrtopogon Loew, Linnea Ent., II, 516, 1847.
Euarmostus Walker, Dipt. Saund., 102, 1851.
Cyrtopogon Schiner, Fauna Austr., I, 133, 1862.
Eupalamus Jaennicke, Berl. Ent. Zeit., 11, 86, 1867.
Cyrtopogon Osten Sacken, West. Dipt., 294, 1877; Cat., 104, 1888.
Cyrtopogon Back, Trans. Amer. Ent. Soc., v. 35, p. 257–258, 1909.
Cyrtopogon Curran, Can. Ent., v. 55, p. 122, 1923.
Cyrtopogon Melander, Psyche, v. 30, p. 102–119, 1923.

Medium to fairly large species, usually quite pilose. Head broader than high, the face in profile swollen or gibbous, and long pilose. Antennae three-jointed, the third joint bearing a two-jointed style. Thorax moderately arched, usually quite pilose, lateral bristles usually present but without dorsocentrals, ground color usually obscured at least in part with pollen. Scutellum flattened or convex, shining or entirely pollinose, long pilose and sometimes with a few apical bristles intermixed. Hypopleura with a patch of long erect hair. Abdomen rather slender and tapering in the males, usually broadest at the second or third segment in the females, shining black and usually with posterior pollinose fasciae, at least quite long pilose on the sides of the first two or three segments. Legs normal in the females, variously ornamented or modified in the males of a number of species; fore tibiae without terminal claw-like spur; pulvilli and empodia present. The marginal, posterior, and anal cells of the wings open; the third vein branching well beyond the discal crossvein.

Gentoype: *Asilus ruficornis* Fabricius.[2]

The early references above were largely taken from Back.

The genus belongs in that portion of the subfamily Dasypogoninae that lacks a terminal claw-like spur on the fore tibiae, and

[2] Coquillett, D. W. 1910. The Type-Species of the North American Genera of Diptera. No. 1719, Proc. U. S. Nat. Mus., v. 37, p. 530.

belongs to a group of genera with the fourth posterior cell open that has the face in profile distinctly swollen or gibbous. It can be separated from the related genera by the following key:

Key to Cyrtopogon and Related Genera

1. Gibbosity of the face reaching to the base of the antennae; front not much wider at the vertex than at the antennae; anal cell of the wings open; male genitalia with all parts present, the hypandrium without a prominent posterior fringe of hairs; eighth segment of the female abdomen not differing from the preceding segments 2

   Gibbosity of the face not reaching the antennae; front much wider at the vertex than at the antennae; anal cell of the wings closed; male genitalia inverted, the epandrium absent and the hypandrium bearing a prominent posterior fringe of hairs; the eighth segment of the female abdomen forming the basal part of a polished ovipositor which differs from the preceding segments 4

2. Third vein of the wings usually branched before or opposite the discal crossvein, anterior crossvein well beyond the middle of the discal cell, with small clouds on the crossveins and furcations; third antennal joint broadest basally, tapering apically; disc of scutellum silky pilose and with a row of very long bristles on the posterior margin; densely pilose species ..... *Eucyrtopogon* Curran

   Third vein of the wings branched well beyond the discal crossvein, anterior crossvein usually well before the middle of the discal cell, without clouds as above; third joint of the antennae usually broadest at or beyond the middle; scutellum uniformly pilose, or bare with short, strong marginal bristles 3

3. Scutellum bare, with short, strong marginal bristles; dorsocentral bristles usually present; abdomen with the posterior corners and the anterior margins of most segments pollinose; bare species.

   Nannocyrtopogon Wilcox and Martin[3]

   Scutellum long pilose, sometimes with a few apical bristles intermixed; dorsocentral bristles absent; abdomen never with pollinose markings as above; more pilose species.

   Cyrtopogon Loew

[3] Genotype: *Cyrtopogon cerussatus* Osten Sacken.

4. Dorsocentral bristles usually present and well developed; scutellum with long marginal bristles; abdomen with at least the entire posterior margin of most segments pollinose.

Lasiopogon Loew

Dorsocentral bristles absent; scutellum bare, or with only a few short, weak marginal hairs; only the posterior corners of most of the abdominal segments pollinose.

Alexiopogon Curran

Synopsis of the Species of Cyrtopogon

An attempt has been made to arrange the species into groups and, although not entirely satisfactory, the following synopsis will probably be of some help in showing relationships:

A. Scutellum convex, largely or entirely shining:

B. At least abdominal segments 2–4 or 3–5 largely covered with dense reddish or yellowish pollen:

VULNERATUS GROUP: *vulneratus* Mel., *platycauda* Curr., *varans* Curr., *bigelowi* Curr.

BB. At most the posterior margins of the abdominal segments plainly pollinose:

C. Third antennal joint yellowish red:

D. Scutellum extremely convex, sides of the mesonotum shining:

MARGINALIS GROUP: *marginalis* Loew, *longimanus* Loew.

DD. Scutellum convex but not extremely so, mesonotum pollinose:

E. Legs black, male fore tarsi elongate:

PRINCEPS GROUP: *princeps* O. S., **vandykei,** n. sp.

EE. The tibiae at least largely reddish:

F. Face broad, male fore tarsi elongate:

PERSPICAX GROUP: *perspicax* Cole.

FF. Face narrow, male fore tarsi normal:

G. Male abdominal segments 2–4 with dense fulvous pile:

AURIFEX GROUP: *aurifex* O. S., *auratus* Cole, **auripilosus,** n. sp.

GG. Male abdomen carinate apically, without conspicuous pile:

PULCHER GROUP: *pulcher* Back, *glarealis* Mel.

CC. Third antennal joint black:

H. Abdomen with at least segments 2–3 entirely covered with dense, erect, yellowish or fulvous pile; large species:

DASYLLOIDES GROUP: *dasylloides* Will., *dasyllis* Will., *semitarius* Mel., *curtistylus* Curr.

HH. Abdomen without dense pile as above:

I. Last two joints of middle tarsi of males with a disc of black hairs:

CALLIPEDILUS GROUP: *callipedilus* Loew, *cymbalista*, O. S., *praepes* Will., *plausor* O. S., *willistoni* Curr.

II. Last two joints of middle tarsi of males without disc:

J. Wings bimaculate, especially prominent in males:

MACULIPENNIS GROUP: *maculipennis* Macq., *bimacula* Wlk.

JJ. Wings not bimaculate:

K. Western species:

L. Tibiae and tarsi more or less reddish:

MONTANUS GROUP: *montanus* Loew, *leucozona* Loew, *albovarians* Curr., **basingeri**, n. sp., **jemezi**, n. sp.

LL. Legs black:

M. Pollinose bands entire or nearly so:

INVERSUS GROUP: *inversus* Curr., **stenofrons**, n. sp., **aldrichi**, n. sp.

MM. Pollinose bands broadly interrupted:

DUBIUS GROUP: *dubius* Will., *rufotarsus* Back.

KK. Eastern species: *falto* Walk.,

laphriformis Curr., *lyratus* O. S., *alleni* Back, *tenuis* Brom.

AA. Scutellum more or less flattened and largely pollinose:

N. Scutellum entirely black:

NITIDUS GROUP: *nitidus* Cole.

NN. Scutellum largely pollinose:

O. Last joint of male fore tarsi extremely flattened and as long as joints 2–4 together:

LEPTOTARSUS GROUP: *leptotarsus* Curr., *lineotarsus* Curr., *predator* Curr., **planitarsus,** n. sp.

OO. Last joint of male fore tarsi not flattened:

P. Pollinose band on first abdominal segment entire:

Q. Mystax black:

PROFUSUS GROUP: *profusus* O. S., *evidens* O. S., **swezeyi,** n. sp.

QQ. Mystax largely or entirely white:

R. Legs reddish:

ANOMALUS GROUP: *anomalus* Cole.

RR. Legs black:

RATTUS GROUP: *rattus* O. S., *thompsoni* Cole, *ablautoides* Mel., *caesius* Mel.

PP. Pollinose band on first abdominal segment interrupted:

S. Legs largely reddish:

TIBIALIS GROUP: *tibialis* Coq.

SS. Legs black:

T. Posterior margin of scutellum pollinose:

LUTATIUS GROUP: *lutatius* Walk., *infuscatus* Cole, **fumipennis,** n. sp.

TT. Margin of scutellum shining black:

U. Hypopleural hairs of males at least partly black:

REJECTUS GROUP: *rejectus* O. S., *sudator* O. S., **curtipennis,** n. sp., **vanduzeei,** n. sp.. **rainieri,** n. sp.

UU. Hypopleural hairs of both sexes entirely white:

NUGATOR GROUP: *nugator* O. S.,

sansoni Curr., **idahoensis,** n. sp., **albifrons,** n. sp., **banksi,** n. sp., **beameri,** n. sp.

KEY TO THE SPECIES OF CYRTOPOGON

1. Last joint of the male fore tarsi extremely flattened and subequal in length to joints 2–4 together; at least abdominal segments 1–5 with entire posterior pollinose fasciae; face noticeably divergent below; first antennal joint twice as long as the second, the two together subequal in length to the third joint 2

   Last joint of the male fore tarsi not flattened; abdominal segments 1 and 5 never both with entire posterior pollinose fasciae, or, if so, the scutellum flattened and densely pollinose over the entire disc and more than the narrow posterior margins of the segments pollinose; face not noticeably divergent below; first antennal joint usually but little longer than the second, the third longer than the first two joints together 5

2 (1). At least the hind tibiae and tarsi reddish or yellowish 3

   Tibiae wholly black, middle and hind tarsi black 4

3 (2). Tibiae all reddish or yellow, darker apically; all of the male abdominal segments and segments 1–6 of the females with entire posterior pollinose fasciae; mystax broadly black in the middle; length 12–15 mm. (Ont.) ..... *leptotarsus* Curran

   Hind tibiae reddish brown, the others black; male abdominal segments 1–6 and female segments 1–5 with entire posterior pollinose fasciae; mystax narrowly black in the middle; length 11–18 mm. (B. C., Wash., Idaho) ..... *predator* Curran

4 (2). Mesonotum largely pollinose; last joint of the male fore tarsi translucent and only about one-half the width of the first joint, joints 1–4 with strong black bristles posteriorly in addition to the long anterior ones; male ocellar tubercle with a long dense lateral tuft of black hairs on each side; hypopleural hairs black above; length 11–15 mm. (Oreg.) ..... **planitarsus,** n. sp.

   Mesonotum largely shining black; last joint of the male fore tarsi equal in width to the first joint and dorsally with short black hairs apically, joints 1–4 with short white lateral bristles on each side and with dorsal an-

terior long black ones; male ocellar tubercle black haired but not forming tufts; hypopleural hairs entirely white; length 11–16 mm. (Alta., Mont.).
lineotarsus Curran

5 (1). Scutellum convex, mostly shining, sometimes with a transverse spot of pollen at the base; in profile the face usually strongly gibbous and the antennae usually situated at about three-fourths the height of the head: more densely pilose and less pollinose species 6

Scutellum more or less flattened and largely or entirely pollinose (without pollen in *nitidus* Cole); in profile the face usually not so strongly gibbous and the antennae usually situated at about one-half the height of the head; less pilose and more densely pollinose species 46

6 (5). Northern species with conspicuous reddish or yellow pollinose areas on the dorsum of the basal abdominal segments and with short pile that does not nearly obscure the ground color (Canadian species) 7

Abdomen not as above, usually only the narrow posterior margins of the segments pollinose 10

7 (6). Third antennal joint yellowish-red 8

Third antennal joint black 9

8 (7). Hair of the anterior tibiae and tarsi chiefly white and rather long; sides of first segment and most of segments 2–4 of the abdomen reddish-yellow pollinose; length 11 mm. (Man.) ..... *platycauda* Curran

Pile and bristles of the legs black; the posterior one-half of the third and the greater part of the two following abdominal segments densely reddish pollinose; length 15 mm. (Ont.) ..... *varans* Curran

9 (7). Abdomen from the middle of second to apex of seventh segment mostly dull ochreous pollinose, pile yellow, segments 7–8 and genitalia black haired; basal half of hind tibiae reddish; wings grayish hyaline; length 10–13 mm. (Ont., Que.) ..... *bigelowi* Curran

Abdomen from the middle of second to apex of fifth segment mostly golden pollinose, mostly fulvous haired, segments 6–8 and genitalia and sides of segments 4–5 black haired; basal three-fourths of hind tibiae reddish; wings with narrow brown clouds on crossveins and furcations; length 10 mm. (Ont.).
vulneratus Melander

10 (6). Third antennal joint yellowish red 11
Third antennal joint black (somewhat reddish in *dasyllis* Will., a large species with erect yellowish pile entirely covering dorsum of abdominal segments 2–4) 20

11 (10). Scutellum extremely convex, gibbous, as high as long; humeri, sides of the mesonotum and postalar calli, shining black 12
Scutellum convex but not gibbous; humeri and sides of the mesonotum largely pollinose 13

12 (11). Mesopleural, hypopleural, and scutellar hairs white; femora apically and the tibiae and tarsi reddish; fasciae of the female abdominal segments narrowly interrupted; length 11–12 mm. (Can., N. H., N. Y., Mass., Va., N. C.) ..... *marginalis* Loew
Mesopleural, hypopleural, and scutellar hairs brownish or black; legs entirely black; fasciae of the abdominal segments entire; length 9–12 mm. (Calif.).
longimanus Loew

13 (11). Legs entirely black 14
Tibiae and tarsi more or less reddish 15

14 (13). Claws white with black tips; male fore tarsi slender, one and one-half times the length of the fore tibiae and densely silvery pilose above; posterior pollinose fasciae of the female abdomen broadly interrupted and the mesonotum largely grayish-white pollinose; length 10–14 mm. (Calif., Oreg., Wash.).
(*cretaceus* O. S.) *princeps* Osten Sacken
Claws largely black with reddish bases; male fore tarsi about one and one-third times the length of the fore tibiae, entirely short black pilose; segments 2–5 of female abdomen with entire posterior pollinose fasciae and mesonotum with the central stripe and the intermediate spots subshining brown; length 12–14 mm. (Calif.) ..... **vandykei,** n. sp.

15 (13). Face broad, in both sexes four-fifths the width of one eye; hairs on the front and ocellar tubercle largely white; scutellum strongly convex; male fore tarsi one and one-half times the length of the fore tibiae; male abdomen with lateral tufts of black pile, female with less tufted black and white pile; fasciae of the abdomen interrupted; length 10 mm. (Oreg., Calif).
perspicax Cole

Face narrow, in both sexes at most two-thirds the width of one eye; hairs on the front and ocellar tubercle black; scutellum not strongly convex 16

16 (15). Male abdominal segments 2–4 with dense tufted yellowish or orange pile; female abdomen with similar sparse, erect pile, that on segment 2 not noticeably longer than on segment 3 17

Male abdomen without dense pile as above; in female the pile on segment 2 much longer than on segment 3 19

17 (16). Segments 6–7 of the male abdomen with dense, erect lateral tufts of short velvety black pile; last two joints of the fore and middle tarsi of both sexes black; male fore tarsi shorter than the fore tibiae (70–85); length 8–10 mm. (Calif., Oreg., Wash., B. C.) ..... *aurifex* Osten Sacken

Segments 6–7 of the male abdomen with short, sparse, recumbent black hairs; fore and middle tarsi of both sexes reddish or yellowish; male fore tarsi as long as their tibiae 18

18. (17). Fore tibiae and tarsi of the males with a uniform posterior fringe of white hairs which are as long as the diameter of these segments; fore tibiae with about one-half of the bristles pale yellowish and those of their tarsi entirely so; fifth male abdominal segment with very short, sparse, black hairs; mystax orange; length 9–12 mm. (Oreg., Wash., Alta., Idaho, Mont., Wyo., Utah) ..... (*albitarsis* Curr.) *auratus* Cole

Fringe of white hairs posteriorly on the male fore tibiae and tarsi not more than one-half the width of these segments and more or less recumbent, the bristles largely black; fifth abdominal segment of the males with rather long, dense, recumbent black hairs; mystax yellow; length 10–14 mm. (Wash.).

auripilosus, n. sp.

19 (16). Hairs on the sides of the first three male abdominal segments largely yellowish, and the hairs posteriorly on the fore femora yellowish; females, hypopleural hairs about one-half yellowish, wings gray villous not definitely marked with brown; length 12–14 mm. (Colo., Ariz., Utah) ..... *pulcher* Back

Hairs on the sides of the first three male abdominal segments largely black, as are the hairs posteriorly on

the fore femora; females, hypopleural hairs largely black and wings distinctly marked with brown on the crossvein and furcations; length 10–15 mm. (Wash., Oreg., Calif., Idaho, Wyo., B. C.) ..... *glarealis* Melander

20 (10). Abdomen with dense, erect, light colored pile at least entirely covering the dorsum of abdominal segments 2–3; large species, 15 mm. in length or more 21

Abdomen without dense pile on the dorsum as above 24

21 (20). Yellowish pile of the abdomen confined to the three basal segments; anterior crossvein near the base of the discal cell, wings more or less hyaline; style of the antennae short, thick, almost rectangular in side view; length 15–17 mm. (Wash., Oreg., Calif.). *semitarius* Melander

At least the four basal abdominal segments yellowish pilose 22

22 (21). Yellow pile extending on to the fifth abdominal segment dorsally; mystax yellow; apex of the wings with a dark suffused spot; length 17 mm. (Wash., Oreg., Calif., Idaho, N. Y.) ..... *dasylloides* Williston

Yellowish pile confined to the four basal abdominal segments 23

23 (22). Wings of the male with a large apical spot and the last section of the fifth vein clouded brown; mystax black in male, yellow in the middle in the female; coxae yellow pilose; fore tibiae of the male black pilose; apical one-half of the female wing fuscous; length 16–18 mm. (Colo., Idaho, Oreg., Wash., Alta., Alaska, Calif.) ..... *dasyllis* Williston

Outer one-half of the wings yellowish-brown, darker in the middle and front; mystax bright yellow laterally bordered by stouter black hairs; coxae black haired; outer one-fifth of the male fore tibiae white pilose; females, hairs of the head, thorax, and legs entirely black; length 16–18 mm. (Utah, Calif., Idaho, Mont.). *curtistylus* Curran

24 (20). At least the last two segments of the middle tarsi of the males with a broad disc of black hairs; male fore tarsi silvery pilose above; face at the antennae subequal in width to the width of one eye, strongly gibbous ... 25

Middle tarsi of the males without disc of black hairs; face usually narrower than the eyes and not so strongly gibbous 29

25 (24). Pad of hairs on the middle tarsi confined to the last two segments and very broad, about six times the width of the segments; silvery hairs on the fore tarsi parted on all segments 26

Pad of black hairs on the middle tarsi not much more than three times the width of the segments and not always confined to the last two points; silvery hairs on the fore tarsi not parted on all joints 27

26 (25). Silvery hairs on the male fore tarsi underlined with dense black hairs on the outer joints; pile of the abdomen at least partly light colored; pulvilli whitish; females, mesonotum pollinose and abdomen all white haired; length 11–12 mm. (Calif.) ..... *callipedilus* Loew

No dense black hairs underlying the white hairs on the male fore tarsi; hairs of the abdomen entirely black in both sexes; pulvilli brown; length 11–13 mm. (Calif.) ..... *cymbalista* Osten Sacken

27 (25). Hairs of the abdomen and thorax in both sexes yellowish-white; length 12–13 mm. (N. Mex., Colo., Nebr., Idaho) ..... *plausor* Osten Sacken

Hairs of the abdomen and thorax always at least partly black in both sexes 28

28 (27). Joints 1–5 of the male fore tarsi with a narrow crest of silvery hairs not noticeably expanded apically; legs entirely black; hairs of the body mostly black, first two abdominal segments yellow haired; hind femora yellowish haired; length 11–12 mm. (Wash., Oreg., Calif.) ..... *praepes* Williston

Silvery hairs on the male fore tarsi confined to joints 2–5, noticeably expanded apically; tibiae and tarsi usually reddish but sometimes entirely black; usually more than the two basal abdominal segments pale haired; hind femora black haired; length 11–16 mm. (B. C., Alta., Wash., Oreg., Calif., Utah, Idaho, Mont.). *willistoni* Curran

29 (24). Wings of the male with a large apical brown cloud and a smaller cloud covering the apex of the anal cell, female wings more or less darkened in the same regions; pleura largely shining black 30

Wings not bimaculate; pleura more extensively pollinose 31

30 (29). Mystax of both sexes largely white or yellowish; abdomi-

nal hairs of the males white; length 9–15 mm. (N. H., Minn., Que., N. Mex., Colo., Wyo., Idaho, Oreg., Wash., B. C., Mont.) ..... *bimacula* Walker

Mystax of both sexes black with a few white hairs intermixed in the middle; abdominal hairs of the males largely black; length 10–14 mm. (Canada, Europe). *maculipennis* Macquart

31 (29). Western species 32

Eastern species 42

32 (31). Tibiae and tarsi more or less reddish 33

Legs black, hind tibiae sometimes dark reddish 37

33 (32). Mystax of both sexes largely or entirely black; fore tarsi of the males yellowish 34

Mystax of both sexes largely white; male fore tarsi black. 35

34 (33). Male fore tarsi slender, one and one-half times the length of the fore tibiae, with sparse, recumbent, short black hairs; tibiae in both sexes reddish only near the middle; style one-half the length of the third joint; claws white, only the tips black; length 8–13 mm. (Calif.). **basingeri,** n. sp.

Fore tarsi normal and but little longer than the fore tibiae, with fringes of long yellowish hairs on the anterior and posterior sides; tibiae wholly reddish; style one-third the length of the third joint; claws black, the basal one-half yellowish-red; length 12–16 mm. (N. Mex.) ..... **jemezi,** n. sp.

35 (33). Hypopleural pile entirely black; abdominal fasciae narrowly interrupted in male, entire in female; wholly black pilose excepting head and legs and a few hairs on the sides of the first abdominal segment and in the female the propleura; length 8–16 mm. (Colo., N. Mex., Calif., Oreg., Wash., B. C., Idaho) (if male fore tarsi is silvery pilose, see *dubius* Will.). *montanus* Loew

Hypopleural pile mostly or entirely white (dimorphic females of *montanus* ??) 36

36 (35). Hypopleural hairs entirely white; sternopleura with fine white hairs; fore tibiae blackish or piceous; length 8–10 mm. (Calif., Oreg., Wash., B. C., Idaho, Colo., N. Mex.) ..... *leucozona* Loew

Hypopleural hairs partly black; sternopleura with fine

black hairs; all the tibiae rather pale yellow; length 11–12 mm. (Alta.) ..... *albovarians* Curran

37 (32). Fore tarsi of the males not silvery pilose above; fasciae of abdominal segments 2–4 entire or nearly so 38

Male fore tarsi silvery pilose above; fasciae of the abdomen rather broadly interrupted on all segments 41

38 (37). Scutellum gibbous, as high as long; humeri, lateral margins of mesonotum and postalar calli, shining black; mystax black in both sexes with a few white hairs intermixed at the middle; male abdomen black pilose, female white excepting base of first segment; male hind legs white pilose above but the hairs sparse, erect; length 9–12 mm. (Calif.) ..... *longimanus* Loew

Scutellum convex but not gibbous; at least humeri and lateral margins of mesonotum pollinose 39

39 (38). In profile the antennae situated but slightly above one-half the height of the eyes; male hind tibiae with sparse white hairs; mystax of male entirely and of female largely black; scutellar hairs entirely, hypopleurals of male largely and of female entirely white; face at antennae five-eighths the width of one eye; length 12–14 mm. (N. Mex., Ariz.) ..... **stenofrons,** n. sp.

In profile the antennae situated at two-thirds the height of the eyes; male hind tibiae with dense white hairs above; mystax of both sexes largely or partly white 40

40 (39). Male hind femora, tibiae and tarsi dorsally with dense white hairs; mystax largely white in both sexes; pollinose fasciae of abdominal segments 2–5 entire in both sexes; hypopleural and scutellar hairs black; face of male three-fourths and of female four-fifths the width of one eye; length 10–16 mm. (B. C., Wash., Oreg., Mont., Wyo., Colo.) ..... *inversus* Curran

Male hind femora apically and the hind tibiae with a long, dense, erect fringe of white hairs, tarsi with similar fringe but the hairs largely black on segments 1–3; mystax largely black in both sexes; pollinose fasciae of abdomen interrupted; hypopleural and scutellar hairs black, the female hypopleurals white; face of male five-sixths and of female four-fifths the width of one eye; length 10–12 mm. (Calif.) ..... **aldrichi,** n. sp.

41 (37). Fore tibiae and tarsi of male with sparse white pile not concealing the light yellowish-red color of the tarsi

from above; hind tibiae black haired excepting at tip; claws broadly yellowish basally; humeri subshining, the central stripe of mesonotum and the intermediate spots separated by pollen; length 9–12 mm. (Mont., Oreg., Utah) ..... *rufotarsus* Back

Fore tibiae and tarsi of males with appressed silvery white pile concealing the ground color of at least the tarsi; hind tibiae with appressed silvery hairs above; humeri and adjacent region of mesonotum densely silvery-white pollinose, the blackish presutural spots confluent with the central stripe; length 9–14 mm. (Oreg., Wash.) ..... (*tacomae* Mel.) *dubius* Williston

42[4] (31). Scutellum white haired 43

Scutellum black haired 44

43 (42). Legs (except coxae and trochanters) chestnut, usually darker toward the base; sides of the abdomen with white hair, rather long on segments 1–3, dorsum with short, fine, sparse, erect black hair; wings of male brown, the costal and first basal cells quite dark, the basal half of the subcostal cell hyaline, wings of female hyaline, clouded with brown along crossveins in region of discal cell; length 11.5–15 mm. (Me., N. H., Mass., N. C., Que., Ont., N. B.) ..... *alleni* Back

Legs shining black, the extreme apices of the femora, basal fourth of the tibiae, and base of each tarsal segment reddish or deep orange, strongly contrasting with the black; abdomen of male with conspicuous orange pile on the third and following segments, abdomen of female with the orange pile less conspicuous, much shorter laterally, and practically limited to segments 3–5; wings of male brownish with a dark spot in the basal part of the marginal cell, wings of female hyaline with a brownish spot in the marginal cell; length 12–13.5 mm. (N. H.).

laphriformis Curran

44 (42). Mystax with more (male) or less (female) golden hair; hypopleural hairs yellowish or white; femora black,

[4] We are especially indebted to Richard Dow, of the Boston Society of Natural History, for revising couplets 42 to 45 based on specimens of all five species which, so far as we know, are available only in the collection of that Society.

basal half of the tibiae reddish, abruptly black apically; length 9–16 mm. (N. S., Que., Ont., Man., Alta., Me., N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Fla., Ill., Wisc.) ..... *falto* Walker

Mystax without golden hair 45

45 (44). Hypopleural hairs black; mystax black and white, all the white hair on the upper half of the face; legs black; clouding of wings gray; silvery and brownish pruinosity not covering large areas of the mesonotum; length 11 mm. (Me., N. H., N. Y., N. C.).

lyratus Osten Sacken

Hypopleural hairs white; mystax black and white, the white hair not confined to the upper half of the face; basal one-third to three-fourths of the tibiae chestnut; clouding of wings brown; silvery and brownish pruinosity covering most of the mesonotum; length 8.5–10 mm. (Me.) ..... *tenuis* Bromley

46 (5). Pollinose fasciae on the first abdominal segment entire 47

Only the sides of the first abdominal segment pollinose 54

47 (46). Mystax entirely black 48

Mystax largely or entirely white 50

48 (47). The femora below and the tibiae and tarsi largely reddish; claws white with black tips; pollinose bands on the abdomen extending forward along the lateral margins; length 11–13 mm. (Kans., Colo., N. Mex.).

profusus Osten Sacken

Legs entirely black; claws black, the bases reddish; pollinose bands confined to the posterior margins of the segments 49

49 (48). Hairs of the first two antennal joints, ocellar tubercle, mesonotum, scutellum, mesopleura, and tibiae white; bristles of femora and tibiae largely white; segments 1–5 of abdomen with entire posterior gray pollinose fasciae; length 10 mm. (Utah, Wash.).

swezeyi, n. sp.

Hairs mentioned above, black; bristles of the legs entirely black; pollinose fasciae on abdominal segments 4–5 usually interrupted; length 7–12 mm. (Calif., Oreg., Wash.) (if claws white with black tips, see *nugator*).

evidens Osten Sacken

50 (47). The tibiae, and sometimes the femora below, reddish; mystax and scutellar hairs entirely white; anterior

crossvein beyond the middle of the discal cell; sometimes all margins of abdominal segments pollinose, leaving only the disc bare of pollen; length 11–14 mm. (Oreg., Wash., B. C., Idaho) ..... *anomalus* Cole

Legs entirely black; mystax below and on the sides black; usually several apical black bristles intermixed with the white hairs on the scutellum; anterior crossvein before the middle of the discal cell 51

51 (50). Male middle tibiae basally and its metatarsi with a dense brush of white hairs on the front side; female abdomen if largely pollinose with a denuded spot at the middle of each segment 52

Hairs of the middle tibiae and tarsi of the males evenly distributed; segments 2–5 of the female abdomen entirely pollinose except the anterior angles 53

52 (51). Middle part of the abdominal segments denuded of pollen; length 11 mm. (Oreg.) ..... *thompsoni* Cole

Middle part of the abdominal segments entirely pollinose but with a round central denuded spot; length 10–11 mm. (Wash.) ..... *ablautoides* Melander

53 (51). Bristles of the middle and hind tibiae largely and the posterior bristles on the fore tibiae, white; male abdomen except the anterior angles of the segments pollinose?; length 9–10 mm. (Calif., Oreg.).
rattus Osten Sacken

Bristles of all the tibiae largely black; segments of the male abdomen broadly denuded of pollen at the middle; length 9 mm. (Wash., Oreg., Wyo.).
caesius Melander

54 (46). Pleura largely, sides of the mesonotum, and the scutellum entirely, shining black; mystax white centrally in the male, entirely black in female; length 7–8 mm. (Wash.) ..... *nitidus* Cole

Pleura, sides of the mesonotum, and the scutellum largely or entirely, pollinose 55

55 (54). The tibiae and tarsi and at least the femora in part, reddish 56

Legs entirely black 57

56 (55). Legs entirely reddish; sides of the mystax white, the central portion black; mesonotum largely shining black; scutellar hairs white; fasciae of abdomen very broadly interrupted; claws black, the very narrow

bases reddish; length 11–14 mm. (Me., N.H., Mass., N. C., Que., Ont., N. B.) ..... *alleni* Back

Femora largely black, sometimes reddish below; mesonotum largely pollinose; scutellar hairs black; fasciae of abdomen very narrowly interrupted; claws white with black tips; length 9–11 mm. (Ariz., N. Mex.). *tibialis* Coquillett

57 (55). Posterior margin and the central part of, or the entire disc of the scutellum pollinose; face in profile strongly gibbous 58

Posterior margin of the scutellum shining black, the disc entirely pollinose; face swollen but not gibbous 60

58 (57). Gibbosity of the face very large, hemispherical; abdominal segments 1–6 of males with interrupted posterior fasciae, segments 7–8 largely and the genitalia above gray pollinose; segments 2–6 of female abdomen usually with entire fasciae, very broad at the sides and narrow at the middle; mystax largely white in male, entirely black in female; length 8–12 mm. (Oreg., Wash., B. C., Calif.) ..... *infuscatus* Cole

Facial gibbosity not hemispherical; segments 7–8 of the male abdomen and the genitalia not, or not entirely, pollinose; fasciae of female abdomen narrow and interrupted 59

59 (58). Mesopleura and pteropleura with large shining black spots below; mystax of male entirely and of female largely white; abdomen of both sexes with narrow posterior fasciae on segments 2–6, male segments 7–8 largely pollinose; length 7–10 mm. (N. S., Mass., N. Y., Md., Va.) ..... *lutatius* Walker

Only the narrow margin below of the mesopleura and the anterior margin of the pteropleura shining black; mystax of both sexes largely black, a few white hairs intermixed at the middle; segments 2–6 of abdomen with broadly interrupted posterior pollinose fasciae, male segments 7–8 shining black; length 9–11 mm. (Wash., Idaho, B. C.) ..... **fumipennis,** n. sp.

60 (57). Hypopleural hairs at least partly black 61

Hypopleural hairs entirely white 65

61 (60). Hypopleural hairs partly white; face of males subshining black, with a transverse spot of pollen below the antennae 62

Hypopleural hairs entirely black; face of the males entirely whitish or grayish pollinose 64

62 (61). Mesonotum before the suture largely dull black; wings infuscated all over; face narrow, not quite two-thirds the width of one eye; length 7–8 mm. (Calif., Oreg., Wash., Idaho).
(*positivus* O. S.) *rejectus* Osten Sacken

Mesonotum largely pollinose; wings largely hyaline 63

63 (62). Face at the antennae five-sixths the width of one eye; front and anterior portion of the mesonotum whitish pollinose; wings hyaline; length 8–10 mm. (Calif., Oreg., Wash.) ..... *sudator* Osten Sacken

Face about two-thirds the width of one eye; front and mesonotum largely grayish pollinose; wings with a small brown cloud at the apex of the first vein; length 9–11 mm. (Calif.) ..... **curtipennis,** n. sp.

64 (61). Mystax broadly white in the middle in the males, in the females partly white; first antennal joint slightly shorter than the second; males with narrow anterior pollinose fasciae on abdominal segments 3–4; length 8–10 mm. (Calif., Oreg., Wash.) ..... **vanduzeei,** n. sp.

Mystax black, a few of the hairs below white at the tips; first antennal joint longer than the second; male abdomen without anterior pollinose fasciae on segments 3–4; length 7.5–10 mm. (Wash., Oreg.).
rainieri, n. sp.

65 (60). Scutellar hairs largely white; pollinose bands of the abdomen extending forward along the sides of the segments; mystax entirely black; length 9–11 mm. (Idaho, Utah) ..... **idahoensis,** n. sp.

Scutellar hairs black; pollinose bands of the abdomen not extending forward along the sides of the segments 66

66 (65). Wings clear hyaline 67

Wings tinged with brown 69

67 (66). Claws white with black tips; hairs of the tibiae in both sexes black; male genitalia black haired; fasciae on abdominal segments 2–3 usually entire; length 7–11 mm. (Calif., Oreg., Wash.) ..... *nugator* Osten Sacken

Claws black, the bases reddish; at least the hairs of the male hind tibiae white; male genitalia white haired 68

68 (67). Hind tibiae of both sexes white haired; fasciae on abdominal segments 2–3 entire or nearly so; style of the

antennae longer than the width of the second joint; length 7–12 mm. (Wash., Oreg., Calif., B. C., Idaho, Mont., Wyo., Colo., Utah) ..... **banksi,** n. sp.

Male hind tibiae white haired; female black haired; fasciae on all abdominal segments decidedly interrupted; style of the antennae shorter than the width of the second joint; length 9–10 mm. (Alta.).

sansoni Curran

69 (66). The central stripes and the intermediate spots of the mesonotum dark brown, prominent; wings uniformly infuscated; face at the antennae five-sevenths the width of one eye; length 9–10 mm. (Calif., Oreg., Wash., Idaho) ..... ♀♀ *rejectus* Osten Sacken

The central stripes and intermediate spots of the mesonotum obscurely brown; wings lightly infuscated ... 70

70 (69). Front and anterior portion of the male mesonotum densely silvery-white pollinose; fasciae on all abdominal segments broadly interrupted; females, front and anterior portion of mesonotum densely grayish pollinose, face at the antennae six-sevenths the width of one eye; hairs of the hind tibiae black in both sexes; length 8–10 mm. (Idaho, Oreg.) ..... **albifrons,** n. sp.

Front and anterior portion of the mesonotum of both sexes dull yellowish pollinose; fasciae on the second abdominal segment entire or nearly so; females, face at the antennae five-sevenths the width of one eye, hairs of the hind tibiae white, of male black; length 10–11 mm. (Ariz.) ..... **beameri,** n. sp.

DESCRIPTIONS OF THE SPECIES

The manuscript at first was written with complete descriptions of all the species. As these descriptions in most cases are quite long, a manuscript of more than 200 pages evolved. A number of persons were consulted and although they all agreed that it was very desirable to have the descriptions of all the species under one cover, in the interest of economy the earlier descriptions have been eliminated. This elimination is not as serious as it might be, as the descriptions of the previously described species are quite easily obtained. Back's monograph contains descriptions of all the species described previous to 1909, and the descriptions of the remaining species are scattered in only nine other papers.

In addition to the description of the new species, the unde-

scribed sex (usually the female) of a number of species has been described; *C. maculipennis* Macq., recently reported from Canada, is described from European material at hand; and the complete references and distribution of all species are given. No attempt has been made to include short descriptions of the species, as these would largely be but a repetition of the characters used in the synopsis and key. Notes on relationship are given and characters not previously emphasized are mentioned occasionally.

Cyrtopogon marginalis Loew

Cyrtopogon marginalis Loew, Cent., VII, 60, 1866.
Crytopogon marginalis Loew, Berl. Ent. Zeit., 365, 1874.
Crytopogon marginalis Back, Trans. Amer. Ent. Soc., v. 35, p. 267–268, 1909.
Cyrtopogon marginalis Curran, Can. Ent., v. 55, p. 141–142, 1923.
Cyrtopogon marginalis Melander, Psyche, v. 30, p. 103, 1923.
Cyrtopogon marginalis Curran, Can. Ent., v. 56, p. 280, 1924.

Back gives the following distribution: Canada; White Mts., N. H.; Springfield, Mass. (G. Dimmock); New Haven, Conn., May 15; Catskill Mts., N. Y.; N. J. (Smith Cat.); N. J., May 10 (E. Daecke); Virginia. Curran (1923) redescribes both sexes and records it from Walpole, Mass., V-26 '08 (C. W. Johnson), and Sharon, Mass., V-20 '08 (C. W. Johnson). Melander in addition records it from North Carolina. Curran (1924) records it from Lake Nipigon, northern Ontario, July 1922 (Bigelow). Specimens are at hand from the following localities:

Mass.: N. Reading, VI-10 '04 (C. W. Johnson); Sherborn, VI-4 and 11 '16 (C. A. Frost); Walpole, V-26 '08 (C. W. Johnson). N. J.: Camden, V-4 '12 (M. C. Van Duzee). N. Y.: Babylon, L. I., IX-1 '34 (Blanton and Borders).

See note under *longimanus*.

Cyrtopogon longimanus Loew

Cyrtopogon longimanus Loew, Berl. Ent. Zeit., 360, 1874.
Cyrtopogon longimanus Osten Sacken, West. Dipt., 303, 1877.
Cyrtopogon longimanus Back, Trans. Amer. Ent. Soc., v. 35, p. 278–280, 1909.
Cyrtopogon longimanus, Melander, Psyche, v. 30, p. 107, 1923.

Osten Sacken records this species from San Rafael, Marin County, Calif., May 31; Back, from San Francisco, Calif. (H. Edwards), and from Vernon, British Columbia; and Melander, in

addition, from Washington. Two of Osten Sacken's specimens were kindly loaned to the writers by Nathan Banks, and specimens have been seen from the following locality:

CALIF.: Mokel Hill (F. E. Blaisdell).

Although the third antennal joint is not definitely yellowish red, but somewhat reddish in all specimens seen, we have grouped this species with *marginalis*. These two species differ from all others by the extreme convexity of the scutellum, which is as high as long, and in the sharply limited shining lateral margins of the mesonotum including the humeri and postalar calli. It appears doubtful if the species is found elsewhere than in California, the records for Washington and British Columbia probably referring to *inversus* Curran, to which it is most closely related if the third antennal joint is to be considered black. We have included it at both places in the key so as to prevent any confusion on this point.

Cyrtopogon princeps Osten Sacken (Plate III)

Cyrtopogon princeps Osten Sacken, West. Dipt., p. 302, 1877.
Cyrtopogon cretaceus Osten Sacken, ibid., p. 302–303.
Cyrtopogon princeps Back, Trans. Amer. Ent. Soc., v. 35, p. 273–274, 1909.
Cyrtopogon cretaceus Back, ibid., p. 287–288.
Cyrtopogon princeps Cole, Proc. Calif. Acad. Sci., 4th series, v. 9, p. 234–235, 1919.
Cyrtopogon cretaceus Melander, Psyche, v. 30, p. 104, 1923.
Cyrtopogon princeps Melander, ibid.

Described from Webber Lake, Sierra Nevada, Calif., July 22. Osten Sacken says of *C. cretaceus*: "This species, like *C. princeps*, has the ungues whitish, with black tips; both species were found in the same locality; they are too different, however, to be taken, without further evidence, for the sexes of the same species." Cole describes a specimen from McKenzie Ridge, Oreg., elevation 6,000 feet, VIII-1 '09, as the female of *princeps* and records specimens from Mt. Jefferson (J. C. Bridwell), and Horse Lake, elevation 6,000 feet, VII-25 '09. Large numbers of specimens of both sexes have been collected in diverse localities associated together, and although none have been taken in copula, there seems to be no doubt but that they are the sexes of the same species. The face is broad, in the males seven-eighths the width of, and in the females equal to the width of, one eye. Specimens are at hand from the following localities:

CALIF.: Gold Lake Camp, Plumas County, VII-19 '16 (H. G.

Dyar). Oreg.: Crater Lake, VI-21 '24 (C. L. Fox); Hood River, VI-8 '17 (L. Childs); Homestead Inn, Mt. Hood, VII-6 '27 (E. C. Van Dyke); Horse Lake, elevation 6,000 feet, VII-25 '09 (J. C. Bridwell); Mt. Hood, elevation 3,000–6,000 feet, VI-22 '25 (Van Dyke); Mt. Hood, VII-18 '31 (R. H. Beamer); Mt. Hood, Cloud Cap Inn, elevation 6,000–7,000 feet, VII-6 '30 (H. A. Scullen); Mt. Hood, Sherwood Forest Camp, VI-29 '30, VI-26 '32, VII-17 '33 (J. Wilcox); Sky Line Trail, above Frog Camp, Three Sisters, elevation 5,500 feet, VII-19 '27 (H. A. Scullen); Subalpine Regions, Mt. Jefferson, VII-20 '07 (J. C. Bridwell). Wash.: Mt. Adams, elevation 6,000 feet, VII-3 '25 (M. C. Lane and E. C. Van Dyke), VIII-17 '32 (A. R. Rolfs); Mt. Rainier, White River Camp, VI-3 to VIII-5 '33, VI-17 '34 (C. H. and D. Martin, Itol J. and J. Wilcox); Signal Peak, VII-2 '33 (Martin), VII-20 '33 (P. M. Eide), and VI-21 '35 (S. E. Crumb and Wilcox).

Cyrtopogon vandykei, n. sp. (Plate III).

Male: Length 12 mm. Head black, face thinly grayish-yellow pollinose, subshining; front densely golden pollinose; occiput gray pollinose. Mystax light yellowish white on the upper two-thirds, lower one-third black; hairs of the front ocellar tubercle, upper occiput, the entire eye margin, first two antennal joints, and the second palpal joint black; beard and hairs of proboscis and the first palpal joint white. First two antennal joints and the style black; the third dull yellowish-red; first joint nearly twice as long as the second but narrower; the third very slender, coarctate, $1\frac{1}{3}$ times the length of the first two joints together; style slightly more than one-half the length of the third joint.

Thorax largely shining black, the humeri yellowish pollinose; the narrow lateral margins, the transverse suture, and the area behind the humeri and between the humeri and the central stripe golden-brown pollinose. Hairs of mesonotum and scutellum entirely black, no bristles present. Scutellum largely shining black, base rather broadly golden-brown pollinose. Pleura golden pollinose, hairs of the propleura and neck white; remainder of the hairs black, those on the mesopleura rather long and dense.

Abdomen entirely shining black and black haired excepting some lighter hairs on the venter at the base, hairs on the sides of the first three segments longer than on the remaining segments; segments 3–5 with broadly interrupted posterior

gray pollinose fasciae. Genitalia very large, shining black and black haired, a few short pale hairs at apex; surstyli longer than segments 5–7 together, and with a rounded projection on the inner side near the middle.

Legs including coxae shining black; bristles black; claws narrowly reddish at base, otherwise black; pulvilli brown; empodium black. Hairs of the coxae white, of the fore and middle legs entirely black excepting a few lighter hairs basally on the femora and the usual short golden pile on the anterior side of the fore tibiae and below on the tarsi. Hind legs anteriorly and dorsally yellowish-white haired; posteriorly largely black haired. Fore tarsi elongate, basitarsi one-half the length of the fore tibiae, all the joints together 1.35 times the length of the tibiae.

Halteres dark brown. Wings quite uniformly brown, the auxiliary cell entirely dark brown, some lighter spots in the posterior, discal, basal, and anal cells; veins dark brown, anterior crossvein at one-sixth the length of the discal cell, anal cell narrowly open.

Female: Length 14 mm. Differs from male as follows: Face and front grayish-yellow pollinose. The central stripe and lateral spots of the mesonotum brown pollinose, subshining, instead of shining black as in the male, remainder of pollen golden brown; humeri yellowish-gray pollinose; two weak black presutural bristles. Abdomen black, segments 2–5 with broadly interrupted posterior gray pollinose fasciae; hairs on the first five segments brown with white tips, hairs on the sixth and remaining segments short, sparse, white; apical spines brown. Legs black, hair similar to that of male but light hairs on hind legs not as dense or as conspicuous as in the male; hairs and bristles posteriorly on the fore and middle tibiae long, rather abundant and quite conspicuous, more so than in the male. Fore tarsi not as long as in the male, 1.1 times the length of the fore tibia. Wings very light brownish, slightly darker around the anterior crossvein and in subcostal cell.

Holotype: Male, Forest Home, San Bernardino County, Calif., VI-11 '28 (E. C. Van Dyke); in the California Academy of Sciences.

Allotype: Female, same data, VI-19 '28; in the California Academy of Sciences.

Paratype: female same data, VI-12 '28; in the California

Academy of Sciences; differs from the allotype in that the hairs of the abdomen are largely white.

It gives the writers pleasure to name this species in honor of the collector, Dr. E. C. Van Dyke, who has added much to the knowledge of Western Diptera by material collected on his numerous and extensive trips.

The face in both sexes is about three-fourths the width of one eye.

Cyrtopogon perspicax Cole

Cyrtopogon perspicax Cole, Proc. Calif. Acad. Sci., 4th series, v. 11, no. 7, pp. 233–234, 1919.
Cyrtopogon perspicax Melander, Psyche, v. 30, p. 104, 1923.
Cyrtopogon perspicax Cole, Pan-Pac. Ent., v. 1, p. 10, 1924.

Described from specimens of both sexes taken at Hood River, Oreg., May 15, 1917, May 29, 1917, and in June (F. R. Cole). In 1924 Cole records it from Muir Woods, Marin County, Calif., May 9, 1920 (E. C. Van Dyke). Specimens are at hand from the following localities:

Oreg.: Corvallis, V-27; Mosier, VI-14 (L. Childs); Linn County, V-24 '19 (A. L. Lovett); Alsea (J. E. Davis); and Salem, V-22 '28 (H. L. Griepentrog).

The convexity of the scutellum is nearly as extreme as in *marginalis* and *longimanus*, especially in the females.

Cyrtopogon aurifex Osten Sacken (Plate III)

Cyrtopogon aurifex Osten Sacken, West. Dipt., p. 301–302, 1877.
Cyrtopogon aurifex Back, Trans. Amer. Ent. Soc., v. 35, p. 272–273, 1909.
Cyrtopogon aurifex Curran, Can. Ent., v. 55, 135–136, 1923.
Cyrtopogon aurifex Melander, Psyche, v. 30, p. 104, 1923.

Described from Webber Lake, Sierra Nevada, Calif., July 22. Curran redescribes the male from Vancouver Island, British Columbia, June 4, 1888 (G. W. Taylor); Melander in addition records it from Washington. Specimens are at hand from the following localities: Calif.: Gold Lake, Sierra County, VII-2 and 6 '34 (L. S. Rose). Oreg.: Marys Peak, VII-12 '31 (Noel Larson). Wash.: Mt. Adams, Clearwater, VII-22 '34 (Wm. W. Baker); Mt. Adams, Signal Peak, VII-25 '25 (M. C. Lane), and VII-16 '33 (J. Wilcox).

Cyrtopogon auratus Cole (Plate III)

Cyrtopogon auratus Cole, Proc. Calif. Acad. Sci., 4th series v. 9, no. 7, p. 230, 1919.

Cyrtopogon albitarsis Curran, Can. Ent., v. 54, p. 278–279, 1922.

Cyrtopogon albitarsis Curran, Can. Ent., v. 55, p. 133–135, 1923.

Cyrtopogon albitarsis Melander, Psyche, v. 30, p. 103, 1923.

Cyrtopogon auratus Melander, ibid., p. 104.

Cyrtopogon albitarsis Curran, Can. Ent., v. 56, p. 279, 1924.

Cole described *auratus* from a single male from Joseph, Oreg. Curran described *albitarsis* from two males taken at Banff, Alberta, July 17, 1916 (C. G. Hewitt), and July 23, 1909 (N. B. Sanson). Curran (1924) describes the female from specimens as follows: Yellowstone Park, Cascades, "Y. R" [Yellowstone River?]. July 22, 1923 (A. L. Melander) and Waterton Lakes, Alberta, July 1, 1923 (J. McDunnough). The specimen described by Curran (1923) as the female of *albitarsis*, he designated as the type of a new species, *albovarians*, in 1924. The above synonymy appears to be necessary. Specimens from Oregon were compared with the type of *albitarsis* by G. Stuart Walley, and with the type of *auratus* by E. P. Van Duzee, and pronounced identical. Large series of specimens are at hand from the following localities: ALBERTA: Banff, VII-9 '24 (Eric Hearle). IDAHO: Long Valley, Alpha, V-27 to VII-1 '34 (C. H. and D. Martin). OREG.: Strawberry Mt., Grant County, elevation 8,600 feet, VIII-23 to 31 '32 (D. K. Frewing); Wallowa Lake, elevation 4,500–5,500 feet, VII-27 '29 (H. A. Scullen). UTAH: Uinta Mts., Tryol Lake (G. L. Hayward and J. C. Fletcher); Uinta Mts., VI-26 (V. M. Tanner). WASH: Mt. Spokane, VII-2 '30 (J. M. Aldrich). WYO.: Sylvan Pass, Yellowstone Park, VI-18 '30 (E. C. Van Dyke).

Cyrtopogon auripilosus, n. sp. (Plate III)

Male: Length 10 mm. Face and occiput yellowish-gray pollinose; the front, ocellar tubercle, vertex and occiput light golden-brown pollinose; palpi and proboscis black. Mystax yellow, the hairs on the oral margin and a single row on either side black; hairs of front, ocellar tubercle, vertex, upper occiput, along the eye margin below, and on the second joint of the palpi black; beard white; hairs of proboscis and first joint of the palpi yellowish. First two antennal joints black, the first longer than the second, with black hairs; third joint

yellowish red, broadest slightly beyond the middle, $1\frac{1}{3}$ times the length of the first two joints together; style black, one-fourth length of the third joint.

Mesonotum golden-brown pollinose, the central stripe dull brown bisected by a golden-brown line; a large round presutural spot on each side, subshining brownish black; postalar calli and posterior margin shining black. Hairs erect, fine, black; bristles black, 2 presuturals, 3 supra-alars, and 4 postalars. Scutellum convex, shining black with a transverse spot of golden pollen at base; hairs long, black. Pleura and coxae subshining, yellowish-gray pollinose; pronotal hairs white, the remainder yellowish excepting the long hypopleurals and the shorter mesopleurals and sternopleurals, black.

Abdomen shining black, segments 2–4 with a complete posterior pollinose band, wider and golden at the middle, narrow and yellowish laterally, a very small spot of golden pollen on the posterior corner of the fifth segment. Hairs on the sides of the first segment long golden-yellow, on the dorsum short, sparse, yellowish; segments 2–4 with dense golden-yellow hairs, crinkly, recumbent on the dorsum, longer and more erect on the sides; segments 5–7 short, carinate dorsally, segment 5 entirely covered with dense recumbent black hairs, segments 6–7 with shorter, sparse black hairs on the sides, the dorsum shining blue-black. Genitalia shining black, with short black hairs.

Femora black; tibiae excepting apical one-third, which is black, reddish; the tarsi reddish, the fore ones yellowish-red; basal half of the claws reddish, black apically; pulvilli and empodium reddish. Bristles black; hairs black, the femora below basally with yellowish hairs; fore tibiae and tarsi anteriorly, the hind tibiae at the apex, and the metatarsi posteriorly with the usual short golden pile; the fore tibiae posteriorly with a short fringe of recumbent white hairs, dorsally with quite numerous short, black bristles; fore tarsi with similar white hairs posteriorly, part of the bristles dorsally and posteriorly whitish; middle tibiae and tarsi with short white hairs dorsally.

Knob of halteres yellowish white, base and stem brown. Wings infuscated with brown clouds at the base and apex of the discal cell, at the base of the fourth and fifth posterior cells, on the anterior crossvein, and at the base of the first and second submarginal cells; veins brown, anterior crossvein at about one-third the length of the discal cell.

Female: Length 13 mm. Similar. Upper hairs of mystax light yellowish and with more black hairs intermixed. Abdominal segments 2–4 with complete posterior grayish-yellow pollinose fasciae, segments 1 and 5 with less distinct broadly interrupted fasciae, segments 6–8 entirely black, apical spines brown; all segments with erect yellowish hairs, long on segments 1–2, somewhat shorter on 3–4, and very short on the remaining. Fore and middle tibiae and tarsi with black hairs and bristles. Halteres reddish brown.

Holotype: Male, Mt. Rainier, Wash., White River Camp, IX-4 '32 (J. Wilcox); deposited in the California Academy of Sciences.

Allotype: Female, same data, VIII-28 '32 (Itol J. Wilcox); deposited in the California Academy of Sciences.

Paratypes: More than 150 specimens of both sexes from the type locality, VII-30 to IX-4 '32, VII-30 '33, VI-17 and VIII-10 '34, and VII-20 to VIII-10 '35 (Wm. W. Baker, A. E. Bonn, S. E. Crumb, Jr., Itol J. and J. Wilcox, and C. H. and D. Martin), and Mt. Rainier, Wash., Sunrise, elevation 6,400 feet, VIII-27 '32 and VIII-5 to 10 '35, (J. Wilcox).

Cyrtopogon pulcher Back

Cyrtopogon pulcher Back, Trans. Amer. Ent. Soc., v. 35, p. 274–275, 1909.

Cyrtopogon pulcher Melander, Psyche, v. 30, p. 103, 1923.

This species was described from a single male specimen taken at Palmer Lake, Colo., July 10. The female is described below:

Female: Length 14 mm. Very similar to male. Mystax largely black with a few finer yellowish hairs scattered in the middle. Hairs of vertex, front, ocellar tubercle, upper occiput and around the border of the eyes, the first two antennal joints, and the second palpal joint black; beard, hairs of the first palpal joint, and the proboscis white. Third antennal joint yellowish-red but somewhat darkened apically.

Hairs of the prothorax and coxae white, of the mesopleura black; a few yellowish hairs on the sternopleura mixed in with the black, hypopleural tuft slightly more than one-half yellowish, the remainder black. Hairs of the mesonotum and scutellum black. Thorax black with pollinose markings as described for the male.

Abdomen brown (probably slightly teneral) shining; the second to fourth segments with complete posterior pruinose

fasciae, the first with a trace of pollen at the sides and the fifth with a broadly interrupted posterior fascia although there are touches of pollen which indicate that the pollen might extend all the way across the segment; sixth to eighth segments entirely shining. Hairs entirely white or yellowish-white, long on the sides of the first two segments, somewhat shorter on the third, and quite short and more yellowish on the remaining segments. Apical spines brown.

Femora black; tibiae and tarsi reddish, the tibiae with the apical one-fourth black; the last tarsal joint darker than the others. Hairs below and on the posterior side of the femora long, yellowish, otherwise largely black; hairs of the tibiae and tarsi black, excepting the short yellow pile below on the tarsi, on the anterior side of the fore tibiae, and at the tip on the posterior side of the hind tibiae; bristles all black. Claws reddish brown at base, with black tips; empodium reddish brown; pulvilli brown.

Halteres light yellowish, only the base and lower stem brown. Wings more or less uniformly covered with gray villi; the discal, costal, and first basal cells largely clear hyaline; veins dark brown, anterior crossvein at two-ninths the length of the discal cell.

Described from a female specimen taken at Long's Peak Inn, Colo., elevation 9,000 feet, VII-15 '26 (E. C. Van Dyke); in the California Academy of Sciences. A male, same data, agrees very closely with Back's description. Additional specimens are at hand as follows: Colo.: Boulder, Verde "Past." [Pasture? Pass?], VII-16 '33 (M. T. James); Horseshoe Park, RMNP, VII-6 '33 (Helen Rodeck); Roan Mts., above Ute trail, July (Cockerell). Ariz.: Pinal Mts., Gila County, July (D. K. Duncan). Utah: Mt. Timpanogas, VII-30 '33 (G. P. Engelhardt). This specimen, a male, differs from the typical form in lacking the posterior fringe of white hairs on the fore tibiae and tarsi, in having the fore tarsi reddish instead of yellowish, and in having the last joint largely black. This may prove to be a distinct species when more material is collected.

See note under *glarealis*.

Cyrtopogon glarealis Melander

Cyrtopogon glarealis Melander, Psyche, v. 30, p. 113–114, 1923.

Described from specimens of both sexes taken at Wolf Fork, Touchet River, Blue Mountains, Wash., July 12–20, 1922 (V.

Argo). Specimens are at hand from the following localities: Oreg.: Wallowa Lake, Aneroid Lake Trail, elevation, 6,200 feet, VI-22 and 27 '29 (H. A. Scullen); Haines, VII-10, '31 (R. H. Beamer). Wash.: Spokane, VI-24 '30 (J. M. Aldrich). British Columbia: Salmon Lake, Nicola District, VI-29 '30 (Eric Hearle). Idaho: Gold Hill, Latah County, VII-27 '27 (J. M. Aldrich); Moscow Mts., V-3 '33 (Paul Scheffer); Long Valley, Alpha, V-27 to VI-17 '34 (C. H. and D. Martin). Mont.: Big Hole Battle Field, Beaverhead County, VII-3 '34 (Wm. L. Jellison); Gallatin County, VII-20 '27. Wyo.: Madison Junction, Yellowstone Park, VII-4 '26 (C. B. Philip) and VII-1 and 2 '34 (Wm. L. Jellison); Yellowstone Park, Dunraven Pass, VI-25 '30 (E. C. Van Dyke). Calif.: Angora Peak, Tahoe, VII-13 '15 (M. C. Van Duzee).

This species and *pulcher* are very closely related; the males have the apical abdominal segments more or less carinate, and the narrow dorsum of the segments is pollinose as are the posterior margins.

Cyrtopogon vulneratus Melander

Cyrtopogon vulneratus Melander, Psyche, v. 30, p. 118–119, 1923.

Cyrtopogon vulneratus Curran, Can. Ent., v. 56, p. 277, 279, 251, 1924.

Described from a single male taken at Coniston, Ontario, 27 July (H. S. Parish). A male specimen is at hand from the following locality: Ontario: Kearney, VII-26 '11 (M. C. Van Duzee).

Cyrtopogon bigelowi Curran

Cyrtopogon bigelowi Curran, Can. Ent., v. 56, p. 277–279, 1924.

Described from specimens of both sexes from the following localities: Macdiarmid, Ontario, July 6, 1922 (N. K. Bigelow), same locality and collector VI-28 and VII-12 '22, and same locality, VII-4 '23. We have seen a male specimen from the following locality: Quebec: Lav'ltrie, V-22 '24 (J. Oeullet).

Cyrtopogon varans Curran

Cyrtopogon varans Curran, Can. Ent., v. 55, p. 141, 1923.

Cyrtopogon varans Curran, Can. Ent., v. 56, p. 279, 1924.

Described originally from a single female from Gaspé, Quebec, Sept. 4, 1914 (C. H. Young). The male was described in 1924 from Macdiarmid, Ontario, June 21, 1923 (N. K. Bigelow). We have not seen this species.

Cyrtopogon platycauda Curran

Cyrtopogon platycauda Curran, Can. Ent., v. 56, p. 251–252, 1924.

Described from a single male from Glen Souris, Manitoba, June 5, 1923 (H. H. Robertson). We have not seen this species.

Cyrtopogon dasylloides Williston

Cyrtopogon dasylloides Williston, Trans. Amer. Ent. Soc., v. 11, p. 11, 1884.

Cyrtopogon dasylloides Back, Trans. Amer. Ent. Soc., v. 35, p. 278, 1909.

Cyrtopogon dasylloides Melander, Psyche, v. 30, p. 105, 1923.

Described from a single male from Washington Territory. Back mentions two females under his discussion of *dasyllis* that are likely this species, one from Pike, N. Y., and the other from Sisco, Calif. Melander in addition records the species from Oregon and Idaho. The female is described below.

Female: Length 17 mm. Entirely black; the femora black, below reddish (the fore pair at base only), the tibiae and tarsi entirely dark reddish-brown. Mystax largely, beard below, hairs of proboscis, of first joint of palpi, of coxae, of segments 1–4 of the abdomen largely, and the narrow dorsum of the fifth segment yellowish white; otherwise entirely black haired and bristled exclusive of the short yellowish pile anteriorly on the fore tibiae and below on the tarsal joints. Style of antennae about one-sixth the length of the third joint, tapering slightly, truncate at apex, with a minute apical bristle. Wings brown anteriorly on the apical two-thirds, especially along the veins.

Described from a specimen taken at Mt. Rainier, Wash., Round Pass, elevation 4,000 feet, VIII-18 '32 (Wm. W. Baker).

Differs from females of *C. dasyllis* Will. in that *dasyllis* females usually have the beard and the hairs of the palpi and proboscis entirely black, the dorsum of the first and the fifth abdominal segments entirely black haired, and the style of the antennae about one-fourth the length of the third joint.

Specimens are at hand from the following localities: Wash.: Red Mountain, elevation 5,000 feet, VII-22 '28 (K. W. Gray); Mt. Rainier, Sunrise, elevation 6,400 feet, VI-17 '34, VII-27 and 31 '32 (Itol J. and J. Wilcox, C. H. and D. Martin). Oreg.: Antelope Mt., Harney County, elevation 6,500 feet, VII-6 '31 (D. K. Frewing); Strawberry Mt., Grant County, elevation 8,600 feet, VIII-26

'32 (D. K. Frewing). IDAHO: Long Valley, Alpha, VI-17 '34 (C. H. Martin); Schafer Butte, 40 miles N. of Nampa (H. E. Hasbrook).

Cyrtopogon dasyllis Williston (Plate III)

Cyrtopogon dasyllis Williston, Kan. Univ. Quart., v. 2, p. 66, 1893.

Cyrtopogon dasyllis Back, Trans. Amer. Ent. Soc., v. 35, p. 277–278, 1909.

Cyrtopogon dasyllis Curran, Can. Ent., v. 55, p. 132–133, 1923.

Cyrtopogon dasyllis Melander, Psyche, v. 30, p. 105, 1923.

Described from a male taken at top of Deer Mt., Colo., Aug. (F. H. Snow). Curran redescribes the male and describes the female from specimens taken at Kaslo, B. C., September (J. Cockle). Melander in addition records it from Idaho. Specimens are at hand from the following localities: ALASKA: Skagway, Dewey Glacier, elevation 6,000 feet, VII-29 '23 (J. A. Kusche). ALBERTA: Banff, July 1932 (F. S. Carr). WASH.: Mt. Rainier, Sunrise, elevation 6,400 feet, VII-23 and 31 '32, VII-30 '33 (C. H. and Dorothy Martin, Itol J. and J. Wilcox); Mt. Rainier, White River Camp, IX-7 to 14 '32 (Martins and Wilcoxes); Mt. Rainier, Paradise Inn, VII-20 '30; Randle, IX-3 '32 (A. E. Bonn). OREG.: Strawberry Mt., Grant County, elevation 8,600 feet, VIII-23 to 31 '32 (D. K. Frewing).

See note under *dasylloides*.

Cyrtopogon semitarius Melander

Cyrtopogon semitarius Melander, Psyche, v. 30, p. 115, 1923.

Described from a single male taken at Alta Vista, Mt. Rainier, Wash., July 29, 1922 (Melander).

The female is described below.

Female: Length 18 mm. Similar. Head black, face and occiput thinly gray pollinose. Mystax and hairs entirely black, excepting four or five hairs on each side above in the mystax and the short hairs at the tip of the proboscis, which are yellowish. Structure of the antennae as described for male.

Thorax black, subshining; a narrow median stripe, a small spot outside of the dorsocentral stripes at the transverse suture, a large triangular spot bordering the dorsocentral stripes and opposite the posterior extremity of the humeri, and a round spot anterior to and mesad of the humeri golden pollinose; a larger spot anterior to the transverse suture on the lateral margins is

more grayish pollinose; pleura very thinly golden pollinose; scutellum black, with a narrow transverse stripe of golden pollen at the base. Hairs and bristles entirely black excepting a few fine whitish hairs on the anterior side of the fore coxae.

Abdomen entirely black, shining with somewhat of a greenish metallic reflection on the basal segments. Hairs on the sides of the first segment, and the second and third segments entirely, erect yellowish-white pilose; the dorsum of the first segment and the fourth and remaining segments black pilose, decreasing in length and density apically. Venter entirely shining black, with black hairs. Apex of ovipositor short golden pilose, with a circlet of black spines.

Femora black, the hind tibiae and all tarsi light reddish-brown; the middle tibiae slightly darker reddish-brown, narrowly blackish apically; the fore tibiae dark chestnut brown, black apically. Hairs and bristles entirely black excepting the anterior side of the fore tibiae and the venter of the tarsal joints, which are short golden pilose. Claws light reddish brown with black tips; empodium light reddish brown; pulvilli yellowish brown.

Wings lightly tinged with brown, more intense along the veins and crossveins. Veins brown, anterior crossvein at the basal one-fourth of the discal cell. Stem of halteres dark brown, knob reddish brown.

Described from a female specimen taken at Mt. Rainier, Wash., Sunrise, elevation 6,400 feet, VII-31 '32 (J. Wilcox).

About 50 specimens of both sexes on hand taken in the above locality in July and August (S. E. Crumb, Wm. W. Baker, C. H. and D. Martin, and Itol J. and J. Wilcox); and two specimens taken at Mt. Adams, Wash., VII-15 '32 (A. R. Rolfs); a male, Mt. Adams, Wash., VIII-3 '30 (F. P. Dean), Quaintance No. 14243, in the U. S. National Museum.

Cyrtopogon semitarius **californicus,** n. subsp.

Female: Length 16 mm. Differs from typical females as follows: More yellowish hairs in the mystax; beard largely yellowish white but with some black hairs on the eye margin; longer hairs below on the proboscis, hairs of the prothorax, and all coxae yellowish-white; the pollinose markings of the thorax are slightly more extensive than in the typical specimens; the structure of the antennae and the yellowish hairs on the abdo-

men are identical, otherwise this might be considered a new species.

Holotype: female, Sequoia National Park, Welverton, Calif., VI-25 '29 (E. C. Van Dyke); in the California Academy of Sciences.

Paratypes: 2 females with same data.

A specimen of *semitarius* collected on Mt. Hood, Oreg., was seen in the Snow Collection at the University of Kansas, but as no notes were taken it is not known whether it is typical or not.

Cyrtopogon curtistylus Curran

Cyrtopogon curtistylus Curran, Can. Ent., v. 55, p. 133, 1923.

Described from two male specimens taken at Cache Junction, Utah, June 3, 1912 (H. R. Hagan), type in C. W. Johnson collection. The female is described below.

Female: Length 15 mm. Head black, face and occiput thinly gray pollinose, entirely black haired. Thorax, coxae, and scutellum entirely shining black and black haired. Abdomen shining black, the eighth segment and the apical spines brownish; the dorsum of the first segment sparsely yellow haired, the sides of the first segment and the entire dorsum of segments 2–4 with dense, erect fulvous hairs, the remaining segments and the venter black haired. Legs black, the tarsal joints in part brownish; bristles black; hairs black exclusive of the short golden pile anteriorly on the fore tibiae, at the tip of the hind tibiae below, and below on the tarsal joints; claws black, the bases reddish; pulvilli light brown; empodium reddish. Halteres yellowish white, the base and lower stem dark brown. Wings nearly hyaline, somewhat clouded at the middle anteriorly, anterior crossvein at three-tenths the length of the discal cell.

Described from a female collected at Glacier Park, Timpanogas, Utah (Elmo Hardy).

Additional specimens are at hand from the following localities: Utah: Bountiful, 1929 (H. J. Pack). Calif.: Mt. Lassen, elevation 8,000 feet, VII-14 '34 (G. P. Engelhardt). Oreg.: Hermiston, V-10 '30 (H. A. Scullen). Idaho: Long Valley, Alpha, VI-10 '34 (C. H. Martin). Mont.: Blue Nose Mt., Montana-Idaho divide, elevation 8,600 feet, VII-23 '33 (C. B. Philip).

The specimens from Utah and California, males, have fulvous hair on the abdomen as described for the female above; the other specimens have these hairs on the abdomen yellowish. Some speci-

mens have the middle and hind tibiae reddish. The Oregon specimen has the third antennal joint expanded apically, with an apical pit, but no style; we have a female specimen of *dasyllis* with a similarly deformed third antennal joint.

Cyrtopogon callipedilus Loew (Plate II)

Cyrtopogon callipedilus Loew, Berl. Ent. Zeit., 358, 1874.
Cyrtopogon callipedilus Osten Sacken, West. Dipt., 296, 1877.
Cyrtopogon callipedilus Williston, Trans. Amer. Ent. Soc., v. 11, p. 12, 1884.
Cyrtopogon callipedilus Coquillett, Psyche, IX, 129, 1902.
Cyrtopogon callipedilus Back, Trans. Amer. Ent. Soc., v. 35, p. 268–269, 1909.
Cyrtopogon callipedilus Melander, Psyche, v. 30, p. 106, 1923.

Back gives the following habitats: Yosemite Valley (June 5–12), Summit Station, Sierra Nevada, Calif., July 17, and Webber Lake, Sierra County, Calif., July 22–26.—Osten Sacken: Southern Wyo., alt. 8,000 ft.; Hudsonian Zone, N. Mex.; Sisco, Calif., alt. 6,000 feet (from G. Franck). Melander in addition records it from Colorado. It seems possible that records from other than California refer to *willistoni*. Specimens on hand from the following localities: Calif.: Fallen Leaf Lake, VI-28 '30 (A. T. McClay), VII-17 (W. J. Chamberlin); Lake Tahoe, VI-28 '25 (E. H. Nast), VII-2 '34 (M. W. Stone); Lakeside, Tahoe, VI-30 '27 (J. M. Aldrich); Meadow Valley, Plumas County, 3,000–4,000 feet, VI-14 and 15 '24 (E. C. Van Dyke); Sequoia National Park, 2,000–5,000 feet, Potwisha, V-18 '30 (E. C. Van Dyke); Summit, Sierra Nevada (O. Sacken ?); Truckee, VI-20 '27 (E. P. Van Duzee), VII-2 '34 (M. W. Stone); Tuolumne, IV-18 '34 (E. P. Van Duzee); Yosemite Valley, V-24 '28 (A. T. McClay), VI-9 '30 (F. E. Blaisdell), VII-5 '27 (E. H. Nast), VII-8 '21 (E. C. Van Dyke).

The above records refer to the typical form which have the tibiae entirely and the first joint of the tarsi largely, reddish. A new subspecies is described below.

Cyrtopogon callipedilus **nigritarsus**, n. subsp.

Males and *females:* Length 10–14 mm. Differs from the typical form in having the tarsi and the tips of all the tibiae, and sometimes the fore tibiae entirely ,black.

Holotype: Male, Carrville, Trinity County, Calif., 2,400–2,500 feet, V-15 to 16 '34 (E. C. Van Dyke), in the California Academy of Sciences.

Allotype: Female, same data, V-18 '34, in the California Academy of Sciences.

Paratypes: 23 specimens, both sexes, from the type locality VI-22 '31, and V-15 to VI-4 '34; Fort Tejon, Kern County, Calif., V-14 '28 (E. C. Van Dyke); and Tejon Canyon, Kern County, Calif., V-11 and 12 '27 (E. C. Van Dyke).

Cyrtopogon cymbalista Osten Sacken (Plate II)

Cyrtopogon cymbalista Osten Sacken, West. Dipt., 297, 1877.

Cyrtopogon cymbalista Back, Trans. Amer. Ent. Soc., v. 35, p. 269–270, 1909.

Cyrtopogon cymbalista Melander, Psyche, v. 30, p. 106, 1923.

Described from both sexes taken at Summit Station, Sierra Nevada, Calif., July 17, and Webber Lake, July 23–24, Calif. Specimens are at hand from the following localities: Calif.: Mt. Lassen, elevation 8,000 feet, VII-14 '34 (G. P. Engelhardt and E. P. Van Duzee); Summit, VII-4 '98 (Koebele).

Cyrtopogon plausor Osten Sacken (Plate II)

Cyrtopogon plausor Osten Sacken, West. Dipt., p. 297–298, 1877.

Cyrtopogon plausor Williston, Trans. Amer. Ent. Soc., v. 11, p. 12, 1884.

Cyrtopogon plausor Howard, Insect Book, Pl. XIX, fig. 26, 1902.

Cyrtopogon plausor Jones, Trans. Amer. Ent. Soc., v. 33, p. 277, 1907.

Cyrtopogon plausor Back, Trans. Amer. Ent. Soc., v. 35, p. 270–271, 1909.

Cyrtopogon plausor Melander, Psyche, v. 30, p. 107, 1923.

Described from both sexes from Morino Valley, New Mexico, July 1 (Lieut. W. L. Carpenter); Spanish Peaks, June (the same); Cache Valley, Utah (C. Thomas); divide between Idaho and Montana. Williston records it from Colorado; Jones from Sioux County, Nebraska; and Back in addition from Gallatin Valley, Mont., July 6 (R. A. Cooley). Specimens are at hand from the following localities: Colo.: Agr. Coll., VII-4 '03; A. S. U. C. Lodge, near Boulder, VI-15 '33 (M. T. James); Beaver Brook, RMNP, VII-18 '33 (Helen Rodeck); Creede, elevation 8,844 feet, VIII-'14 (S. J. Hunter); Florissant, VII-17 '07 (S. A. Rohwer); Glendevey, VIII-20 '32 (C. R. Jones); Gold Hill, VI-24 '26 (E. C. Van

Dyke) and VI-24 '32, 8,000 feet (M. T. James); Manitou, VI-20 '26 (E. C. Van Dyke); Platte Canyon, near Idlewild, VII-10 '27 (J. M. Aldrich). N. Mex.: Santa Fe Canyon, VII-23 '26 (E. C. Van Dyke). Utah: La Sal Mts., Mt. Tukuhnikivatz (Irvin Rasmussen and Vasco M. Tanner).

Cyrtopogon praepes Williston (Plate II)

Cyrtopogon praepes Williston, Trans. Amer. Ent. Soc., v. 11, p. 12, 1884.
Cyrtopogon praepes Back, Trans. Amer. Ent. Soc., v. 35, p. 271–272, 1909.
Cyrtopogon praepes Curran, Can. Ent., v. 55, p. 190, 1923.
Cyrtopogon praepes Melander, Psyche, v. 30, p. 108, 1923.

Described from specimens of both sexes from Washington Territory. Curran records it from Washington, Idaho, California, and Colorado; and Melander from Washington and Oregon. In the writer's opinion this species is confined to the more coastal regions of Washington, Oregon, and California. Specimens are at hand from the following localities: Wash.: Olympia, V-15 to VI-10 '32 (C. H. Martin and J. Wilcox); Roy, V-4 '30 (R. Latta), and V-20 '35 (Wilcox). Calif.: San Francisco, IV-18 '26 (C. L. Fox); Santa Cruz, IV-19 (R. Latta); Santa Rosa, V-4 '25.

Cyrtopogon willistoni Curran (Plate II)

Cyrtopogon willistoni Curran, Can. Ent., v. 54, p. 277–278, 1922.
Cyrtopogon willistoni Curran, Can. Ent., v. 55, p. 185–186, 1923.
Cyrtopogon willistoni Melander, Psyche, v. 30, p. 107, 1923.
Cyrtopogon willistoni Cole, Pan-Pac. Ent., v. 1, p. 10, 1924.

Described from both sexes from Chilcotin, British Columbia, June 16, 1920 (E. R. Buckell), Aspen Grove, British Columbia, June 28, 1922 (P. N. Vroom), from various other localities in British Columbia, and from Banff, Alberta. Melander also records the species from Washington; and Cole from Stein Mts., Harney County, Oreg., VI-24 '22 (E. C. Van Dyke and W. J. Chamberlin). Specimens are on hand from the following localities: British Columbia: Aspen Grove, VI-28 '22 (P. N. Vroom); Minnie Lake, V-24 and VII-26 '25 (E. R. Buckell); Nicola, VI-4 '25 (H. L. Seamans); Oliver, V-3 '24 (E. R. Buckell). Wash.: Blue Mts., Godman Springs, elevation 6,000 feet, VII-7 '29 (M. C. Lane); Colville, V-19 '23 (C. H. S.); Mt. Adams, elevation 6,000 feet, VII-1 to 3 '25 (M. C. Lane and E. C. Van Dyke); Mt. Spokane, VI-22 and VII-2

'30 (J. M. Aldrich); Signal Peak, VII-4 '32 (A. R. Rolfs), VII-3 and 16 '33 (C. H. and D. Martin, S. E. Crumb and J. Wilcox); Tampico, V-2 and 6 '26 (M. C. Lane); Yakima, V-16 '31 (A. R. Rolfs). OREG.: Fish Lake, Steins Mts., elevation 7,000 feet, VII-11 '27 (H. A. Scullen); Ontario, V-18 '25 (B. G. Thompson); Steins Mts., Harney County, VI-24 '22 (W. J. Chamberlin); Strawberry Mt., Grant County, elevation 8,600 feet, VIII-23 '32 (D. K. Frewing). CALIF.: Sacramento, VI-4 '15 (M. C. Van Duzee). UTAH: Roosevelt Creek, Raft River Mts., June '28 (V. M. Tanner and D. Elden Beck); Zion National Park (A. M. Woodbury). IDAHO: Long Valley, Alpha, V-20 '34 (C. H. and D. Martin). WYO.: Grand Teton National Park, VI-21 '30 (E. C. Van Dyke); Yellowstone National Park, VI-21 '30, Roosevelt Camp, VI-26 '30, and Mammoth Hot Springs, VI-27 '30 (E. C. Van Dyke). MONT.: Gallatin County, elevation 6,800 feet, VI-27 '00 (Cooley), and VI-16 '24; Madison County, VII-3 '27; Bozeman, elevation 4,400 feet, VI-13 '03 and VI-26 '09.

We are inclined to think that the records for *callipedilus* from other than California refer to this species, and that the records for *praepes* from other than the coastal parts of California, Oregon, and Washington refer to black-legged specimens of this species.

Cyrtopogon maculipennis Macquart (Plate III)

"M. 1834, I, 298, 22; Schiner, I, 135; Kertesz, 70.—*Dasypogon flavimanus* Meigen (pr. p. ♀). *D. litura* Zeller.—Fig. 183."

The above is taken from Séguy, Faune de France, 17 (Asilidae), p. 84–85.

Male: Length 11 mm. Face gray pollinose with a slight yellowish tinge; front, ocellar tubercle, vertex, and upper occiput yellowish-brown pollinose, lower occiput and a broad border around eyes gray pollinose. Mystax black with a few white hairs intermixed; hairs of palpi and proboscis and on about the lower one-fourth of the occiput (exclusive of the black fringe around the eyes) white, remainder of the hairs black. Antennae black, first joint slightly longer than the second, both black haired; the third about 1½ times the length of the first two joints together; style about one-fifth the length of the third joint.

Mesonotum black, the humeri, postalar calli, and lateral and posterior margins shining, the median stripes and presutural spots brownish, the remainder grayish-yellow pollinose. Hairs

black; bristles black, 2 presuturals, 2–3 supra-alars, and 3–4 postalars. Scutellum convex, shining black, long black pilose. Pleura shining black, the coxae, propleura, and mesopleura, and the sternopleura below, yellowish-gray pollinose; hairs of coxae yellowish, of the pleura black, brownish on the propleura.

Abdomen shining black, segments 2–5 with narrow posterior, very broadly interrupted, yellowish-white pollinose fasciae. Hairs black, on the venter and those arising from the pollinose markings yellowish. Genitalia black and black haired.

The femora, extreme apex of tibiae, and last tarsal joint black, otherwise reddish; bristles black; claws black, brownish basally; pulvilli dark brown; empodium brown. Hairs black, a few below at base of fore femora, ventrally and posteriorly on the basal half or more of the middle femora, and ventrally and all around at the base of the hind femora yellowish; otherwise black exclusive of the usual golden pile on the fore and hind tibiae, and below on the tarsi.

Halteres yellowish-brown, the base brown. Wings hyaline with two brown clouds, the larger one filling out the anterior-apical part of the wing, beginning at the base of the discal cell, and the other filling the apex of the anal cell and extending into the adjoining cells; veins brown, anterior crossvein at about three-sevenths the length of the discal cell.

Female: Length 10 mm. A few more white hairs intermixed in the mystax, and lower one-half of the occiput white haired. Hairs of propleura white. Hairs of abdomen white. Wings faintly clouded in same regions as in males.

Described from male specimens received from Germany without data and female, St. Peter, Böhmen, Juli 13, 1887.

This species was reported from Canada (Canadian Zone), Lake Timagami, Bear Island, July 27 '32 (A. W. A. Brown) in Can. Ent., v. 66, p. 246, 1934; determination by C. H. Curran.

Very closely related to *C. bimacula* Walker; differs in having only a few hairs of mystax white in both sexes (in *bimacula* largely yellowish); beard white only on lower one-fourth of occiput (lower one-half in *bimacula*) in males; propleura of male brown haired instead of white; scutellum entirely black (in *bimacula* with spot of pollen at base); hairs of male abdomen largely black; and the larger brown cloud of wings more extensive (in *bimacula* the basal anterior one-fourth of the discal cell is hyaline).

Cyrtopogon bimacula Walker (Plate III)

Euarmostus bimacula Walker, Dipt. Saund., Pt. II, p. 102, Pl. IV, fig. 1, 1851.

Cyrtopogon melanopleurus Loew, Cent., VII, 61, 1866.

Cyrtopogon bimacula Loew, Berl. Ent. Zeit., 365, 1874.

Cyrtopogon bimacula Back, Trans. Amer. Ent. Soc., v. 35, p. 262–263, 1909.

Cyrtopogon bimacula Curran, Can. Ent., v. 55, p. 136–137, 1923.

Cyrtopogon bimacula Melander, Psyche, v. 30, p. 106, 1923.

Back gives the following localities: North America (Walker); White Mountains, and Mt. Washington, N. H. (Osten Sacken); top of Las Vegas Range, N. Mex. (June 28); Lower Minnesota. Curran redescribes the species from Douglas, Manitoba, June 10, 1921 (N. Criddle), and Nordegg, Alberta, July 7, 1921 (J. McDunnough); and says the species occurs across Canada east of the Rockies, extends down to Pennsylvania in the east, and down the western slopes of the Rockies into Colorado; he also records two females from Sudbury, Ontario, and Truro, Nova Scotia. In addition to the above, Melander records it from Wyoming, Idaho, Oregon, and Washington. Specimens are at hand from the following localities: Colo.: Camp Creek R. Sta., VI-19 '20; Aspen, VII-24 to 27 '17, elevation 8,700 feet; South Peak, VII-31 (E. J. Oslar); Ward, VI-25 '22, elevation 9,300 feet. N. Mex.: Las Vegas Mts., elevation 11,000 feet, June '01 (Cockerell). Mont.: Skalkadho Pass, Ravalli County, VII-15 '34 (Wm. L. Jellison). Wyo.: Yellowstone National Park, VII-21 to 22 '20. Oreg.: Aneroid Lake, Blue Mts., elevation 7,500 feet, VII-23 '29 (H. A. Scullen); Horse Mt., Lane County, VII-28 '09; Frog Meadows, Lane County, elevation 4,300 feet, VII-18 '32 (D. K. Frewing). Wash.: Mt. Rainier, Sunrise, elevation 6,400 feet, VII-27 to IX-11 '32 (Wm. W. Baker, S. E. Crumb, Itol J. and J. Wilcox, C. H. and D. Martin); Mt. Rainier, Paradise, VIII-7 '30, VIII-18 '32 (Wm. W. Baker); Mt. Baker, VII-29 '31 (J. Nottingham). British Columbia: Steelhead, VII-3 and 24 '33 (Hugh B. Leech); Lorna, VII-21 '25 (H. Richmond). Quebec: Seven Isls., VII-28 '24 (F. W. Waugh). N. H.: Bretton Woods, VI-30 '09 (M. C. Van Duzee); Mt. Washington (Mrs. A. T. Slosson).

Cyrtopogon bimacula and *C. dasylloides* are the only species so far recorded from eastern and western North America.

See note under *maculipennis*.

Cyrtopogon montanus Loew (Plate IV)

Cyrtopogon montanus Loew, Berl. Ent. Zeit., 362, 1874.

Cyrtopogon montanus Osten Sacken, West. Dipt., 298, 1877.

Cyrtopogon montanus Back, Trans. Amer. Ent. Soc., v. 30, p. 280–281, 1909.

Cyrtopogon montanus Curran, Can. Ent., v. 55, p. 169–170, 1923.

Cyrtopogon montanus Melander, Psyche, v. 30, p. 107, 1923.

Back gives the following distribution: Sierra Nevada (type), Colo. [Calif.?]; Beulah, N. Mex. (H. Skinner); Yosemite and Webber Lake, Sierra Nevada, July 22 (Osten Sacken); Vernon, British Columbia, May 14, '22 (Miss Ricardo). Curran redescribes it from British Columbia and Banff, Alberta, May to June, and designates specimens (females) from Banff, 1911 (N. B. Sanson), and June 9, 1916 (C. G. Hewitt) with wholly white pilose lateral margins as variety *latericaudus*. Melander in addition records it from Idaho and Washington. Specimens are at hand from the following localities: Calif.: Fallen Leaf Lake, VII-14 (W. J. Chamberlin), VI-21 '15 (A. K. Fisher); Lake Tahoe, Fallen Leaf Lake, VII- '19 (L. S. Rosenbaum); Mt. Home Canyon, San Bernardino Mts., VI-8 '24 (J. M. Aldrich); Mt. St. Helens, V-12 '25 (M. C. Van Duzee); Sequoia National Park, Welverton, elevation 7,000–9,000 feet, VI-17 '29 (E. C. Van Dyke); Truckee, VI-12 '27 (E. P. Van Duzee); Yosemite Valley, VII-12 '21 (E. C. Van Dyke). Oreg.: Anthony Lake, VII-11 '31 (R. H. Beamer); Canby, V-8 '29 (Wilcox); Fox, VI-22 '25 (M. M. Reeher); Hood River, VI-2 and 8 '17 (L. Childs); Marys Peak, VIII-23 (W. J. Chamberlin); McKenzie Pass, elevation 5,000 feet, VII-18 '27 (H. A. Scullen) Mt. Hood (H. K. Morrison); Mt. Hood, Sherwood Forest Camp, VI-26 '32 (Wilcox); 20 miles S. W. of La Grande, elevation 4–5,000 feet, V-11 '30 (H. A. Scullen); North Powder, VII-13 '31 (J. Nottingham); Unity, VII-4 '33 (F. H. Shirck).

Wash.: Cle Elum, VI-12 '32 (Wilcox); Mt. Adams, VI-30 and VII-2 '25 (E. C. Van Dyke), Signal Peak, elevation 4,500 feet, VII-10 '27 (M. W. Stone), West Klickitat, elevation 3,500 feet, VI-10 '25 (J. A. Morley), elevation 6,000 feet, VII-3 '25 (M. C. Lane), Ranger Station, VII-2 '33 (C. H. and D. Martin); Mt. Rainier, Sunrise, elevation 6,400 feet, VII-27 to VIII-14 '32 (Wm. W. Baker and Wilcox); Mt. Rainier, White River Camp, IX-14 '32 (Baker and Wilcox); Olympia, V-14 to VI-12 '32 (Martin and Wilcox); White Rock Spg., Stevens Pass, Cascade Mts., VII-13 '30 (E. C. Van Dyke). British Columbia: Departure Bay, VI- '08;

Goldstream, V-6 '25 (W. Downes); Lillooet (A. W. A. Phair); Oliver, IV-23 '27 (E. R. Bucknell); Seton Lake, Lillooet, VI-4 '26 (J. McDunnough). IDAHO: Lake Waha, VI-14 '30 (J. M. Aldrich); Long Valley, Alpha, V-20 '34 (C. H. and D. Martin); McCall, VI-10 '33 (F. H. Shirck); Moscow Mt., IV-17 '34 (C. H. and D. Martin); Moscow Mt., VI-19 '18 (Chas. Melander), VI-10 '30 (J. M. Aldrich); Potlach, V-28 '30 (J. M. Aldrich). COLO: A. S. U. C. Lodge, near Boulder, elevation 7,700 feet, VI-15 '33 (M. T. James); Gold Hill, elevation 8,000 feet, VI-24 '32 (James); Longs Peak Inn, elevation 9,000 feet, VII-13 '26 (E. C. Van Dyke); near Ward, VI-2 to 9 '33 (H. G. and H. E. Rodeck); Poncha Pass, VI-20 '33 (W. Steele). UTAH: Ogden, VII-18 '25, 8,000 feet (A. C. Burrill).

See note under *leucozona*.

Cyrtopogon leucozona Loew

Cyrtopogon leucozona Loew, Berl. Ent. Zeit., 364, 1874.

Cyrtopogon leucozona Osten Sacken, West. Dipt., 299, 1877.

Cyrtopogon leucozona Back, Trans. Amer. Ent. Soc., v. 35, p. 282–283, 1909.

Cyrtopogon leucozona Curran, Can. Ent., v. 55, p. 170–171, 1923.

Cyrtopogon leucozona Melander, Psyche, v. 30, p. 107, 1923.

Back gives the following distribution: Sierra Nevada (type), Webber Lake, July 22, and Yosemite Valley, June 8, Calif.; Beulah, N. Mex. (H. Skinner). Curran records it from Vasseau Lake, British Columbia, May 25, 1920 (W. B. Anderson) and Aspen Grove, British Columbia, June 28, 1922 (P. N. Vroom); Melander also records it from Oregon. Specimens are at hand from the following localities: BRITISH COLUMBIA: Lillooet, V-27 '25 (E. R. Buckell); Vernon, VI-11 '25 (Buckell). CALIF.: Fallen Leaf Lake, elevation 6,300 feet, VI-13 '30 (A. T. McClay), and VI-5 '16 (H. G. Dyar). IDAHO: Lake Waha, VI-18 '30 (J. M. Aldrich); Mink Creek, VI-28 '27, 6,500 feet; Moscow Mts., VI-26. OREG.: Aneroid Lake, Blue Mts., elevation 7,500 feet, VII-24 '29 (H. A. Scullen); Anthony Lake, VII-11 '31 (R. H. Beamer and J. Nottingham); Grant County, VI-20 '14 (W. J. Chamberlin); Haines, VII-10 '31 (R. H. Beamer); Wallowa Lake, Lake Basin Trail, elevation 5–5,500 feet, VII-25 '29 (H. A. Scullen). WASH.: Blewett, V-30 '32 (J. Wilcox); Cle Elum, VI-12 '32 (Wilcox); Mt. Rainier, Sunrise, elevation 6,400 feet, VIII-14 '32 (C. H. and D. Martin and Wilcox); Olympia, V-14 '32 (Martins and Wilcox).

Colo.: A. S. C. U. Lodge, near Boulder, elevation 7,700 feet, VI-15 '33 (M. T. James); Boulder, VI-27 and 29 '32 (James); Longs Peak, VII-14 '20 (M. Dings); Morane Park, RMNP, VI-29 '33 (Helen Rodeck); near Ward, VI-2 to 9 '33 (H. G. and H. E. Rodeck); Tennessee Pass, elevation 10,240 feet, VII-10 (J. M. Aldrich).

Loew, Osten Sacken, and Back all refer to the similarity of this species to the females of *montanus*. Curran compares it to *inversus*. We have collected a good series of this species in diverse localities and always in company with *montanus*, so we are inclined to consider it a light-haired female of that species, more likely to be taken at higher elevations. Mr. M. T. James of the University of Colorado sent the writers a large series of this species together with about an equal number of typical males of *montanus* from the same localities. He stated that he had taken these in copula, but none of the specimens were so marked.

We have since seen a pair on the same pin presumably taken in copula, so if our identification of *leucozona* is correct, the name *leucozona* can be retained only as a variety name for light-haired females of *montanus*.

Cyrtopogon albovarians Curran

Cyrtopogon albovarians Curran, Can. Ent., v. 56, p. 279–280, 1924.

Cyrtopogon albitarsis Curran, female, Can. Ent., v. 55, p. 134–135, 1923.

This species was described by Curran from Banff, Alberta, July 9, 1916 (C. G. Hewitt), in 1923 as the female of *albitarsis*, but in 1924 he proposed the name *albovarians* for this specimen. We have not seen this species, but from the description have placed it close to *leucozona*.

Cyrtopogon jemezi, n. sp.

Males: Length 12–14 mm. Face, front, and occiput grayish pollinose subshining black, the pollen along the eye margins rather dense. Hairs black, the ones on the lower one-third of the occiput and below on the proboscis white. Antennae black; the first joint slightly longer than the second, both black haired; third joint slender, one and two-thirds times the length of the first two joints together; style one-third the length of the third joint.

Mesonotum before the suture apparently brownish-yellow

pollinose, the central stripe and intermediate spots brown, and behind the suture largely shining black. Hairs entirely black; bristles black, 3–4 presuturals and 1–2 supra-alars. Scutellum shining black and long black haired. Pleura and coxae grayish-yellow pollinose, the hairs of the pleura entirely black, of the coxae black and yellowish.

Abdomen shining black, segments 2–4 with narrow quite broadly interrupted posterior grayish pollinose fasciae; hairs rather long, dense, entirely black. Genitalia rather large, shining black and black haired.

Femora black, tibiae, and tarsi excepting the fore tarsi, reddish; hairs black, excepting a few yellowish ones below basally on the femora and the usual golden pile on the fore and hind tibiae; bristles black; claws black, the basal one-half yellowish-red; pulvilli yellowish. Fore tarsi yellowish, slightly longer than the fore tibiae, the bristles yellowish excepting a short black one posteriorly on the first joint; hairs yellowish, forming quite a dense posterior and anterior fringe slightly longer than the diameter of the segments, a few recumbent black hairs posteriorly on the first joint.

Knob of the halteres yellowish red, and the base and stem brown. Wings hyaline with brownish clouds on the crossveins and furcations and basally in the marginal and first submarginal cells; veins dark brown, the anterior crossvein at one-fifth the length of the discal cell.

Females: Length 14–17 mm. Very similar. Black abdominal hairs decreasing in length posteriorly, denser on segments 1–3 and very short and inconspicuous on segments 6–8; apical spines brown. Fore tarsi reddish with some ventral orange pile, otherwise the short hairs black, bristles black.

Cotypes: Male, Valle Grande, Jemez Mts., N. Mex., VII-6 '30 (J. Chamberlin), in the California Academy of Sciences; male, Sandia Mts., N. Mex., 3204 (J. H. Watson), in the U. S. National Museum; male and 3 females, Grant County, N. Mex., VII-2 '35 (R. T. Kellogg), in the writers collection.

None of these specimens are perfect for description and if it were not for the distinctive male characters we would not have attempted the description. The face at the antennae is rather narrow, its relation to the width of the eyes is as follows: male 30–50, female 32–45.

Cyrtopogon basingeri, n. sp.

Male: Length 11 mm. Black, the face, front, and upper occiput thinly gray pollinose, the lower occiput densely so; palpi and proboscis shining. Mystax black with a few white hairs intermixed on the upper part; hairs of the front, ocellar tubercle, vertex, upper occiput, and around the eye margins black; beard and hairs of the proboscis white. Antennae black; first two joints subequal in length, white haired, the second joint with a long black hair below apically; third joint slender, coarctate, nearly twice the length of the first two joints together; style one-half the length of the third joint.

Mesonotum black, thinly dull brown pollinose, the humeri, sides, a spot behind the humeri, and the transverse suture medially gray pollinose. Hairs black, longer presuturally and on the postalar calli. Scutellum convex, shining black, transversally grayish pollinose and with a few fine white hairs basally, otherwise long black haired. Lower pleura and coxae gray pollinose, the pronotum, meso-, ptero- and hypopleura shining black, the pronotum, meso- and hypopleura with dense long black hairs, the hypopleurals erect.

Abdomen shining black, segments 2–3 with a posterior gray pollinose spot on the sides but not reaching the lateral margins and separated dorsally; segments 4–6 with broadly interrupted gray pollinose bands; segments 7–8 and the genitalia entirely black. Hairs long, dense, black on all segments, with tufts of white hairs on the sides posteriorly on segments 1, 3, 4 and 5; genitalia black haired.

Femora black; fore tibiae black, the basal four-ninths and the apical two-ninths of the hind tibiae black, the intermediate portion dark reddish, middle tibiae similar but not so evident; tarsi, excepting the fore ones, black, the bases reddish; claws white, the tips black; pulvilli white. Fore tarsi yellowish-red, slender, $1\frac{1}{2}$ times the length of the fore tibiae. Femora and tibiae with long dense black hairs and bristles, some white hairs above and posteriorly on the femora; tarsi with short black hairs and bristles.

Halteres dark brown. Wings infuscated with a faint brown cloud on the anterior crossvein, on the veins at the end of the discal cell, and a small definite brown cloud in the subcostal cell near the apex of the auxiliary vein and extending into the marginal cell; anterior crossvein at about one-sixth length of the discal cell, anal cell broadly open.

Female: Length 11 mm. Similar. Palpi brown haired (these hairs not evident in male). Hairs behind on the upper occiput white. White hairs mixed in with the black on the pronotum, mesopleura, and hypopleura. Abdominal segments 2–5 with complete posterior pollinose fasciae, somewhat faint at the sides and middle of the second segment and at the middle of the fifth segment; segments 6–8 entirely black, the apical spines black. Hairs black anteriorly on the sides of segments 1–5 and white posteriorly on the sides of these segments, segments 6–8 white haired. More white hairs on the middle and hind femora and some mixed in on their tibiae; fore tarsi somewhat elongate, $1\frac{1}{3}$ times the length of the fore tibiae, black, the bases of the segments reddish.

Holotype: Male, Forest Home, Calif., Falls, XI-10 '34 (A. J. Basinger); deposited in the California Academy of Sciences.

Allotype: Female, same data; deposited in the California Academy of Sciences.

Paratypes: 1 male, 11 females, with same data, and 8 males and 5 females, Forest Home, Calif., XI-10 '35 (M. W. Stone), in the writers' collections; 1 female, Los Angeles County, Calif., Eagle Rock Canyon, elevation 800 feet, III-2 '10 (F. Grinnell, Jr.), in the Ohio State Museum.

Cyrtopogon inversus Curran

Cyrtopogon inversus Curran, Can. Ent., v. 55, p. 172–173, 1923.

Described from both sexes taken at Aspen Grove, British Columbia, June 15 and 28, 1922 (P. N. Vroom), and Darcy, British Columbia, V-14 '18 (W. B. Anderson), Nicola, British Columbia, VI-6 '22 (P. N. Vroom); Chilcotin, British Columbia, VI-7 '20 (E. R. Buckell); Hadley, British Columbia, V-15 '20 (W. B. Anderson). Specimens on hand from the following localities:

British Columbia: Chilcotin, VI-19 '23 (P. N. Vroom); Kamloops, V-24 '23 (Vroom); Lillooet, V-27 '25 (E. R. Buckell); Nicola, V-4 '25 (Buckell); Seton Lake, Lillooet, V-27 and VI-4 '26 (J. McDunnough). Oreg.: Eagle Ridge, Klamath L., V-16 '24 (C. L. Fox). Wash.: Signal Peak, Ranger Station, VII-3 '33 (C. H. Martin); Virden, VI-18 '33 (C. H. Martin). Wyo.: Yellowstone National Park, VI-28 '12 (R. C. Osburn). Colo.: Longs Peak, VI-14 to 19 '22, F. 4774, about 9,000 feet elevation.

See note under *longimanus*.

Cyrtopogon aldrichi, n. sp.

Male: Length 10 mm. Face and front quite densely whitish pollinose with a slight yellowish tinge; occiput grayish-yellow pollinose, subshining black, the pollen dense along the eye margins; palpi and proboscis black. Hairs fine, long, dense, black; a few intermixed at the middle of the mystax, beard and below on the proboscis white. Antennae black; first joint one and two-fifths times the length of the second, the first white haired, the second black haired; third joint slender, slightly coarctate, one and four-fifths times the length of the first two together; style slightly more than one-half the length of the third joint.

Mesonotum largely dull shining black; the anterior portion, the humeri, lateral margins anterior to the suture, and a small spot medially on the transverse suture grayish pollinose; the median stripe anterior to the suture faintly brownish pollinose and anteriorly for a very short distance bisected; between the humeri and the central stripe there is also some brownish pollen. Hairs rather long, dense, black, a few whitish hairs on the dorsocentral rows posteriorly; two presutural bristles, black. Scutellum shining black and long black haired. Pleura and coxae grayish-brown pollinose, subshining black; hairs of the coxae white, of the pleura black.

Abdomen shining black; segments 3–6 with narrow, interrupted posterior grayish pollinose fasciae, the one on segment 6 very broadly interrupted. Hairs long, dense, black, a few white ones intermixed on the sides of the first segment. Genitalia rather large, shining black, and black haired.

Legs black; bristles black; claws black, the bases reddish; anterior pulvilli brown, the hind ones whitish. Fore tarsi slender, about one and one-third times the length of the fore tibiae; middle tarsi normal, somewhat shorter than the middle tibiae; the joints of the hind tarsi globular, much stouter than the anterior ones, together about four-fifths the length of the hind tibiae. Hairs of the fore and middle femora and tibiae long, dense, black with some whitish hairs intermixed, those of their tarsi very short, black; hind femora mixed long white and black haired on the basal two-thirds, apically on the anterior and dorsal sides long white haired; hind tibiae dorsally with a crest of long ($1\frac{1}{2}$ times the width of the tibiae), dense, nearly erect white hairs, anteriorly with sparse recumbent white hairs, and ventrally and posteriorly with long black hairs; hind tarsi with a similar dorsal frings, mixed white and black on segments

1–3, entirely white but shorter on segments 4–5, otherwise hairs short, black.

Halteres brown. Wings brownish, the costal cell and clouds on and near the anterior crossvein dark brown; veins black, the anterior crossvein at about one-fifth the length of the discal cell; anal cell quite broadly open.

Female: Length 12 mm. Hairs of the head shorter, those of the occiput largely white. Mesonotum largely pollinose, behind the suture largely shining black; the broad lateral margins, humeri, behind and to the sides of the humeri, a tapering median bisecting line ending before the suture, and a large spot on the transverse suture medially grayish pollinose; central stripe and intermediate spots brownish pollinose; hairs before the suture black, behind the suture largely white. Scutellum with a transverse spot of grayish-yellow pollen at the base and a few white hairs basally, otherwise long black haired. The mesopleura anteriorly black haired, otherwise the pleura whitish haired. Segments 2–5 of the abdomen with narrow posterior grayish pollinose fasciae, entire on segments 2–4; segments 6–8 entirely black, the apical spines brown; hairs entirely white. Fore coxae about one and two-fifths times as long as the fore tibiae; the hind tarsi stouter than the fore tarsi and somewhat shorter than the hind tibiae, above with long sparse bristle-like black hairs; hind tibiae with a shorter, sparse, dorsal fringe of white hairs; all the femora white haired. Wings nearly hyaline, the costal cell, crossveins and furcations with brownish clouds.

Holotype: Male, Mt. Home Canyon, San Bernardino Mts., Calif., VI-8 '24 (J. M. Aldrich); in the U. S. National Museum.

Allotype: Female, same data, in the U. S. National Museum.

Paratypes: 3 females, same data, two in the writers' collections, the other in the U. S. National Museum; 1 female, Idlewild, Calif., VI-25 '28 (E. C. Van Dyke), in the California Academy of Sciences.

Cyrtopogon stenofrons, n. sp.

Male: Length 12 mm. Face and occiput densely gray pollinose; front, vertex, and ocellar tubercle shining black, gray pollinose along the eyes. About the lower one-fourth of the occipital hairs, those on the first joint of the palpi, and a few at the base of the proboscis white; otherwise hairs of head entirely black. Antennae black; first joint $1\frac{1}{5}$ times the length of the second, both densely long black haired, the second with

2–3 black bristles below; third joint rather slender, coarctate, $1\frac{1}{4}$ times the length of the first two joints together; style about one-half the length of the third joint.

Mesonotum black; the central stripes brown pollinose, and the intermediate spots, divided by the transverse suture, shining brown; otherwise densely yellowish-gray pollinose. Hairs rather long, dense, black; 2–3 black presutural bristles, 3–4 black supra-alars, and 2 yellowish postalars. Scutellum convex, shining black, with numerous long yellowish-white hairs. Pleura and coxae thinly yellowish-gray pollinose, subshining black; hairs white, those on the neck and propleura and a dense long erect tuft on the mesopleura black; the hypopleurals yellowish-white, with a number of blackish ones above.

Abdomen black, segments 2–6 with narrow posterior gray pollinose fasciae; those on segments 2–3 entire, slightly narrowed at middle; on segment 4 very narrowly, on segment 5 narrowly, and on segment 6 very broadly interrupted. Hairs yellowish-white, long on the lateral margins of all segments and on the sides of segments 1–3; on the dorsum short, black. Genitalia rather large, shining black and black haired.

Legs entirely black; claws reddish with black tips; pulvilli and empodium light brownish. Bristles of the femora, about one-half of those on the tibiae (the hind tibiae largely), and a few on the tarsi yellowish; otherwise black. Hairs of the femora largely and of the hind tibiae white; otherwise black. The fore tarsi somewhat elongate, 1 3/10 times the length of the fore tibiae, but not at all slender; the first joint one-half the length of the fore tibiae.

Base and stem of halteres brown, the knob dull yellowish. Wings hyaline, with faint brown clouds on the crossveins and furcations; veins dark brown, anterior crossvein at about one-seventh the length of the discal cell.

Female: Length 12 mm. Similar. About the lower one-half of the occiput white haired, and only a few of the outer hairs on the proboscis black. The hairs on the postalar calli and posteriorly on the mesonotum white. Pleura white haired; the hairs on the neck black; the mesopleurals brownish with a few yellowish ones intermixed. Segments 2–5 of abdomen with narrowly interrupted, posterior, gray pollinose fasciae; hairs entirely white, shorter on the lateral margins of the apical segments; apical spines brown.

Holotype: Male, Grant County, N. Mex., VI-24 '34 (R. T. Kellogg); deposited in the California Academy of Sciences.

Allotype: Female, Silver City, N. Mex., VI-1 '34 (R. T. Kellogg); deposited in the California Academy of Sciences.

Paratypes: 2 females, labeled, "Ariz." in the U. S. National Museum; and male and female, Grant County, N. Mex., VII-2 '35 (R. T. Kellogg) in the writers' collection.

Most closely related to *inversus;* the black mystax, white hairs of scutellum, hypopleura, and abdomen, lack of dense white hairs above on the male hind tibiae and tarsi, the interrupted pollinose bands of the abdomen, and the somewhat narrower face and front are all characters which separate it from *inversus.* The male fore tarsi of the two species are of about the same length, but those of *inversus* are more slender. The width of the face at the antennae is five-ninths the width of one eye (male *inversus,* six-eighths), and in the female five-eighths (female *inversus* seven-ninths).

Cyrtopogon dubius Williston

Cyrtopogon dubius Williston, Trans. Amer. Ent. Soc., v. 11, p. 13, 1884.

Cyrtopogon dubius Back, Trans. Amer. Ent. Soc., v. 35, p. 283, 1909.

Cyrtopogon dubius Melander, Psyche, v. 30, p. 109, 1923.

Cyrtopogon tacomae Melander, Psyche, v. 30, 116–118, 1923.

Cyrtopogon tacomae Cole, Pan-Pac. Ent., v. 1, p. 10, 1924.

Described from a single female specimen from Mt. Hood, Oreg. Melander described *tacomae* from numerous specimens of both sexes from Mt. Rainier, Wash., elevations 5,000–6,000 feet, at the following places in the park: Paradise Park, Van Trump Park, Indian Henry Hunting Ground, Alta Vista, Mt. Ararat, and Crystal Mountain. Specimens on hand from the following localities:

Oreg.: Mt. Hood, elevation 3,000–6,000 feet, VIII-5 '25 (C. L. Fox); Mt. Jefferson, VIII-14 (A. L. Lovett). Wash.: Mt. Baker, VII-9, '31 (R. H. Beamer); Mt. Adams, VII-15 '32 (A. R. Rolfs); Mt. Rainier, Moraine Park, VIII-12 '34 (Wm. W. Baker and R. Latta); Mt. Rainier, Sunrise, elevation 6,400 feet, VIII-13 '31, VII-27 to IX-14 '32, VIII-10 '34 (Wm. W. Baker, Itol J. and J. Wilcox, C. H. and D. Martin); Mt. Rainier, White River Camp, IX-14 '32 and IX-16 '34 (Baker, Wilcox, Martin); Tipsoo Lake, VII-28 '32 (Wilcox).

We regret that it is necessary to replace a name based on a description from which the species is easily recognizable by a name

the species for which has hitherto never been recognized since it was described. The unusual amount of pollen at the base of the scutellum in the female led Williston to place this species close to *profusus,* to which it is not closely related. Through the kindness of Dr. R. H. Beamer, University of Kansas, a loan of the type of *dubius* was obtained and a careful comparison of specimens made possible. The legs of this species are usually entirely black, but a few, especially of the females, have the tibiae and tarsi reddish.

Cyrtopogon rufotarsus Back

Cyrtopogon rufotarsus Back, Trans. Amer. Ent. Soc., v. 35, p. 275–276, 1909.

Cyrtopogon rufotarsus Melander, Psyche, v. 30, p. 107–108, 1923.

Described from specimens of both sexes taken in Gallatin County, Mont., elevation 8,000–9,400 feet, July 9–11 (E. Kock). One of the cotypes and the following are at hand: Mont.: Trappers Peak, Ravalli County, VII-9 '31 (W. L. Jellison). Colo.: Ward, VI-25 '22, about 9,300 feet elevation, F.4779. Utah: Uintah Mts., Tryol Lake (J. C. Fescher), Mirror Lake (Truman Swallow). Oreg.: Aneroid Lake, Blue Mts., elevation 7,500 feet, VII-23 '29 (H. A. Scullen).

Cyrtopogon falto (Walker)

Dasypogon falto Walker, List, II, 355, 1849.

Cyrtopogon chrysopogon Loew, Cent., VII, 55, 1866.

Dasypogon falto Walker, Can. Ent., III, 142, 1871.

Dasypogon falto Osten Sacken, Cat., 69, 1878.

Cyrtopogon chrysopogon Howard, Insect Book, Pl. XIX, fig. 28, 1902.

Cyrtopogon falto Back, Trans. Amer. Ent. Soc., v. 35, p. 263–264, 1909.

Cyrtopogon falto Curran, Can. Ent., v. 55, p. 173–174, 1923.

Cyrtopogon falto Melander, Psyche, v. 30, p. 107, 1923.

Back gives the following distribution: Nova Scotia (type of Walker), Quebec (Van der Wulp), Montreal Isl., Canada, June 10 (Chagnon); Franconia and White Mts., N. H.; Mass., June 1, 6, and 25; Axton, N. Y. (M. and H.); N. J. (Smith Cat.); Fla. (C. W. Johnson); Ill. (Osten Sacken). Curran redescribes the species and records it from Quebec, Ontario, and Manitoba. In addition Melander records it from Connecticut and North Carolina. Specimens are at hand from the following localities: Alberta: Edmonton,

VI-26 '18 (O. S. M.). MANITOBA: Aweme, VI-25 '26 (N. Criddle); Treesbank, VII-6 '26 (R. D. Bird); Melita, VII-9 '27 (E. and S. Criddle). QUEBEC: Aylmer, VI-15 '24(C. H. Curran); Knowlton, VI-21 and 22 '17 (W. J. Brown); Kazubazua, VI-7 '27 (F. P. Ide) and VI-6 and 10 '27 (Brown); Farm Point, VI-26 '27 (J. McDunnough); St. Lambert, VI-13 '27 (Walley and Brown); Shawbridge, VII-2 '26, VII-22 '27 and VII-5 '28 (A. F. Winn); Covey Hill, VI-17 to 30 '27 (Walley and Brown). ONTARIO: Miner's Bay, V-26 '27 (F. P. Ide); Lyn, VII-7 '26 (G. S. Walley). NOVA SCOTIA: Kentville, VI-18 '24 (R. P. Gorham). N. H.: Franconia, Ac. 26226 (Mrs. A. T. Slosson). N. Y.: Babylon, L. I., VI-10 and VII-1 '34 (F. S. Blanton); Cold Spring Harbor, L. I., VI-15 '31 (C. H. Curran); Gowanda, VI-13 '13 (M. C. Van Duzee); Tuxedo, Sta. Study Insects, VI-27 '28 (C. H. Curran). MASS.: Sherborn, VI-11 '16 (C. A. Frost). CONN.: Avon Old Farms, Avon, VI-15 '29 (C. H. Curran). WISC.: Door County, VI-20 to 26 '31 and VII-2 and 20 '30 (C. L. Fluke and M. H. Doner); Sturgeon Bay, VIII-14 '21 (C. L. Fluke). N. DAK.: Tower City, VI-11 '06 (M. W. R.).

Cyrtopogon alleni Back (Plate IV)

Cyrtopogon alleni Back, Trans. Amer. Ent. Soc., v. 35, p. 261–262, 1909.

Cyrtopogon alleni Melander, Psyche, v. 30, p. 108, 1923.

Described from a single female from Mt. Kearsarge, N. H., IX-13 '03 (Dr. G. M. Allen); Melander in addition records it from North Carolina. The male is described below.

Male: Length 12 mm. Face and front shining black, the sides of the face and the occiput densely grayish pollinose. Face at the antennae about five-eighths the width of one eye, the gibbosity strong, especially above. Central one-third of the mystax black, the sides white, the hairs rather short, those above slightly longer; front and ocellar tubercle with dense, rather long, erect, black hairs; fringe around eyes black; occiput, palpi, and proboscis white-haired. Antennae black, first joint twice as long as the second, the first white-haired below, above and the second joint black-haired, the second with 2–3 fine black bristles below; third joint subequal in length to joints 1–2 together; style tapering, about one-half the length of the third joint.

Mesonotum black, the pollinose pattern not nearly so prominent as in the female and the pollen golden rather than grayish;

the dorsocentral stripes being represented by elongate spots opposite the suture. Hairs fine, erect, black; narrowly anteriorly and posteriorly, and on the humeri and postalar calli white. No definite bristles. Scutellum shining black, the disc thinly grayish pollinose, the hairs fine, white. Pleura and coxae grayish pollinose, the hairs entirely white.

Abdomen polished black, the sides of the first segment and the posterior corners of segments 2–7 grayish pollinose. Hairs white, rather long on the sides, segments 2–7 dorsally with very sparse, short, black hairs. Genitalia shining reddish brown, the hairs yellowish.

Legs entirely reddish brown, the femora apically slightly darker. Femora white haired, the fore ones with black hairs dorsally; tibiae and tarsi black-haired exclusive of the orange pile on the fore and hind tibiae; bristles black; claws black, the bases narrowly reddish; pulvilli brown. The fore tibiae longer than the fore tarsi (75–65); the first joint of the fore tarsi longer than joints 2–4 together, joint 5 somewhat flattened and slightly longer than joint 2; claws normal; joints 1–4 with rather long dorsal hairs and bristles.

Wings dark brown, the brown denser in the costal, first basal, and basally in the submarginal and first posterior cells, the subcostal cell largely hyaline. Veins dark brown; the anterior crossvein at three-sevenths the length of the discal cell, anal cell broadly open.

Described from a male specimen with the following data: Bar Harbor, Maine, VIII-18 '20 (C. W. Johnson); in the Boston Society of Natural History.

Female specimens have been seen from the following localities: Mass.: Stony Brook Res., VIII-30 '25. New Brunswick: St. John, VIII-10 '01 (W. McIntosh). Ontario: Toronto (possibly Guelph), VIII-5 '24 (C. Goldring). Quebec: Queen's Park, Aylmer, IX-2 '26 (C. B. Hutchings). This is the only species with the legs entirely reddish.

Cyrtopogon laphriformis Curran

Cyrtopogon laphriformis Curran, Occas. Pap. Bost. Soc. Nat. Hist., v. 5, p. 59, 1923.

Described from a single male taken at Intervale, N. H., VI-26 '09 (S. A. Shaw). The female is described below.

Female: Length 12 mm. Head black, face and occiput densely and the front thinly grayish pollinose. Mystax black

with some yellowish hairs intermixed at the middle, the hairs on the oral margin much longer than those above; front and ocellar tubercle black haired; 6–8 rather definite occipital bristles and a narrow, short, sparse fringe of hairs around the eyes, black; otherwise hairs of occiput, palpi, and proboscis white. Facial gibbosity slight, flattened, face at the antennae three-fourths the width of one eye. Antennae black, the first joint slightly longer than the second, both black-haired, long and numerous below on the first joint, and 2 black bristles below on the second joint; third joint subequal in length to the first two joints together; style two-thirds the length of the third joint.

Mesonotum black, the central stripe subshining black and bisected by a narrow brownish pollinose line; the humeri, lateral and posterior margins, transverse suture, and the dorsocentral stripes posteriorly, grayish pollinose; the intermediate area brownish pollinose appearing subshining black at certain angles. Hairs black, a few anteriorly and those on the humeri white. Bristles slender, black, 3 presutural, 5–6 supra-alar, 2 postalar (yellowish on one side), and 4–5 posterior dorsocentral. Scutellum black, the narrow base densely gray pollinose; hairs white. Pleura and coxae densely grayish pollinose with a slight yellowish tinge, hairs entirely white.

Abdomen shining black, the sides of the first segment and the posterior corners of segments 2–5 grayish pollinose, on segments 2–4 the pollen narrowly following the sutures for a short distance. Hairs, long, white on segments 1–2; shorter, sparse, erect yellowish on segments 3–5; very short whitish on segments 6–8; apical spines brown.

Legs as described for male except that the bristles on the hind tibiae and tarsi are largely reddish brown.

Wings hyaline, the marginal cell light brownish basally; veins brown, the anterior crossvein at three-sevenths the length of the discal cell.

Described from a female specimen with the following data: Intervale, N. H., VI-28 '26 (S. A. Shaw), 2220; in the collection of the Boston Society of Natural History.

This species appears to be most closely related to *anomalus* Cole. The longer mystax on the oral margin, the rather weak facial gibbosity, and the presence of occipital and posterior dorsocentral bristles are all characters in common and not evident in the other species.

Cyrtopogon lyratus Osten Sacken

Cyrtopogon lyratus Osten Sacken, Cat., 232, 1878.
Cyrtopogon lyratus Back, Trans. Amer. Ent. Soc., v. 35, p. 265–266, 1909.
Cyrtopogon lyratus Melander, Psyche, v. 30, p. 108, 1923.

Back gives the following distribution: Catskill Mountain House, N. Y., July (type); White Mts. and Mt. Washington, N. H. (C. W. Johnson). Melander in addition records it from North Carolina. Specimens have been seen from the following localities: MAINE: Oquossoc, VII-1 '22 (C. W. Johnson). N. H.: Mt. Washington, summit (Mrs. A. T. Slosson), and near Glen House, elevation 2,500 feet, VII-16 '15.

Back, in his alteration of Osten Sacken's description to include the male, described the mystax as entirely black. One of the males at hand has the mystax entirely black, while the other two have a small clump of white hairs below the antennae.

Cyrtopogon tenuis Bromley

Cyrtopogon tenuis Bromley, Occas. Pap. Bost. Soc. Nat. Hist., v. 5, p. 126, 1924.

Described from a male and female specimen taken at Southwest Harbor, Maine, VII-20 '23 (C. W. Johnson). We have not seen this species.

Cyrtopogon leptotarsus Curran

Cyrtopogon leptotarsus Curran, Can. Ent., v. 55, p. 186–187, 1923.

Described from specimens of both sexes taken at Norman, Ontario, VII-19 '08 (J. B. Wallis), and Sudbury, Ontario, 1890, VIII-'89 (Evans). We have not seen this species. We have, however, seen two rather poor specimens from Colorado that might be placed here.

Cyrtopogon lineotarsus Curran (Plates I, III, V)

Cyrtopogon lineotarsus Curran, Can. Ent., v. 55, p. 187–188, 1923.

This species was described from a single male taken at Banff, Alberta, VIII-3 '08 (N. B. Sanson). A female specimen doubtfully referred here is briefly described below:

Female: Length 14 mm. Mystax entirely and hairs of occiput and proboscis white; hairs of front, ocellar tubercle, and along the eye margin black; the hairs below on the first antennal

joint white. Mesonotal pattern similar to that described for male *predator* excepting that the area between the humeri and central stripes is bare of pollen; hairs entirely white. Scutellum slightly convex, the discal hairs fine, white, those on the posterior margin stronger, brownish. Pleura and coxae white haired, a few brownish ones intermixed on the mesopleura. Segments 1–5 of abdomen with entire posterior grayish pollinose fasciae, segments 6–8 bare of pollen; hairs apparently entirely white, longer on the sides of segments 1–2. Legs entirely black, the tarsi below and the narrow apices reddish; femora largely white haired; tibiae and tarsi black haired. Wings and halteres as described for male *predator*.

Described from a female, Glacier Park, Mont., VIII-5 '25 (G. A. Mail); in the Canadian National Collection, Ottawa.

The absence of black hairs in the mystax would seem to preclude the possibility of this being the female of *lineotarsus*; however, in two female specimens of an undescribed species from Colorado, one has a facial stripe of black hairs and the other has the mystax entirely white excepting for a few black hairs below the antennae.

See note under *predator*.

Cyrtopogon predator Curran

Cyrtopogon predator Curran, Can. Ent., v. 55, p. 188, 1923.

This species was described from a single female specimen taken at Fort Fraser, British Columbia, VIII-15 '19 (W. B. Anderson). The male is described below:

Male: Length 11 mm. Head grayish pollinose, the front and occiput subshining and the central part of the face shining black. Mystax white, the central one-third to one-fourth black; hairs of front, ocellar tubercle, and a rather wide orbital fringe black; occipital hairs and those below on the proboscis white. Antennae black, first joint twice the length of the second, the first white haired below, above and the second joint black haired; third joint equal in length to the first two joints together; style two-thirds the length of the third joint.

Mesonotum largely shining black, the area between the humeri and central stripe, a transverse band behind the humeri, the narrow lateral margins, a medial longitudinal spot on the transverse suture, and the postalar calli grayish pollinose bordered narrowly with brown; a very narrow short anterior median line brownish. Hairs black, those on the humeri, postalar calli, and a few posteriorly on the mesonotum whitish; no

definite bristles. Scutellum slightly convex, the broad posterior margin shining black, the disc thinly grayish pollinose, the numerous fine hairs white. Pleura and coxae grayish pollinose, the hairs white, those on the mesopleura black.

Abdomen black, segments 1–6 with narrow entire posterior grayish pollinose fasciae. Hairs rather long, on the first segment and on the sides and posterior margins of the remaining segments white, otherwise black. Genitalia black and black haired.

Legs black, the hind tibiae and the tarsi reddish; bristles black; claws black, the bases narrowly reddish; pulvilli brownish. Hairs of the femora largely white, dorsally and apically black; tibiae black haired, excepting the usual golden pile on the fore and hind pairs and the fore tibiae ventrally with a rather long fringe of white hairs; middle and hind tarsi black haired. Fore tarsi yellowish-red, the joints together shorter than the fore tibiae; the last joint extremely flattened and subequal in length to joints 2–4 together; segments 1–2 dorsally with short black hairs; joints 1–4 anteriorly and posteriorly with short whitish bristles, and with long slender black bristles arising dorsally on the anterior side; joint 5 equal in width to the other joints, bare excepting for a rather dense dorsal apical patch of short black hairs; the minute claws black and the minute pulvilli brown.

Knob of halteres yellowish-red, the base and stem brown. Wings glassy hyaline, the veins brown, the anterior crossvein at about two-fifths the length of the discal cell.

Described from a male, Mt. Rainier, Wash., White River Camp, IX-11 '32 (J. Wilcox), deposited in the Canadian National Collection.

Additional specimens from the following localities: Wash.: same data as above (Wilcox and Martin); Tacoma, VIII-7 to IX-4 '32 (Wm. W. Baker, Martin, and Wilcox). Idaho: Long Valley, Alpha, VII-25 '34 (Dorothy Martin).

Mr. G. Stuart Walley has very kindly compared specimens of both sexes with the types of *predator* and *lineotarsus* and could find no essential differences, other than in the color of the legs. It seems possible that, with more collecting, *predator* may have to be made a synonym of *lineotarsus*.

Cyrtopogon planitarsus, n. sp. (Plates III, V)

Male: Length 13 mm. Black, cheeks, palpi, and proboscis shining; otherwise grayish pruinose, the vertex, ocellar tubercle,

and upper occiput very thinly so. Mystax white with a narrow vertical line of black hairs in the middle of the face; hairs of the front, ocellar tubercle, vertex and occiput black; those on the lower occiput behind, on the palpi, and on the proboscis white; the ocellar tubercle with a dense lateral tuft of black hairs on each side, extending well over the eyes. Antennae black; hairs long white below on the first two joints, short black above; first joint nearly twice the length of the second; the third joint subequal in length to the first two joints together, gradually broadening to the apical two-thirds; style tapering, slightly more than one-third the length of the third joint.

Mesonotum shining black, the dorsocentral stripes, the median stripe, and a transverse spot behind the humeri golden-brown pollinose; the lateral margins, transverse suture, postalar calli, and the disc of the scutellum grayish pollinose. Hairs erect, black, longer on the scutellum; no definite bristles. Pleura, and coxae excepting the mesopleura, which are shining black, grayish-yellow pollinose; hairs white, mesopleural hairs black, the hypopleurals brownish above, yellowish below.

Abdomen shining black, segments 1–5 with complete posterior gray pollinose fasciae, somewhat indistinct at the middle of the fifth segment; segment 6 with the hind corners gray pollinose, segment 7 and the genitalia entirely black. Hairs white, long on the sides of the first three segments, short otherwise; hairs on the genitalia black.

Legs, excepting the fore tarsi, black; the bristles black; hairs of the femora largely white, of the tibiae black, exclusive of the usual yellowish pile anteriorly on the fore and posteriorly on the hind tibiae, hairs of the tarsi black; claws black, the bases reddish; pulvilli brown. Joints 1–4 of the fore tarsi yellowish-red; the fifth joint translucent, narrowly brownish and black at the apex, extremely flattened and subequal in length to joints 2–4 together, the minute claws black; joints 1–4 with very long black bristles anteriorly and posteriorly and with shorter white ones ventrally. Fore tibiae with a dense posterior fringe of black bristles and hairs.

Halteres yellowish, the base brown. Wings hyaline, the veins brown, anterior crossvein at about two-fifths length of the discal cell.

Female: Length 14 mm. Similar. Lacking the long lateral tufts of hair on the ocellar tubercle. Pollinose pattern of the

mesonotum more distinct, the central black stripe bisected by a golden-brown pollinose line. Upper two-thirds of the hypopleural hairs black, lower one-third yellowish. Segments 1–5 of the abdomen with complete posterior pollinose fasciae; segments 6–8 bare of pollen, somewhat brownish; apical spines brown. Fore tarsi black, normal; the claws normal.

Holotype: Male, Strawberry Mt., Grant County, Oreg., elevation 8,600 feet, VIII-25 '32 (D. K. Frewing); deposited in the California Academy of Sciences.

Allotype: Female, same data; deposited in the California Academy of Sciences.

Paratypes: Male, 3 females, same data, one taken at 9,600 feet elevation and from VIII-23 to IX-2 '32, in the writers' collections.

Cyrtopogon profusus Osten Sacken (Plate IV)

Cyrtopogon profusus Osten Sacken, West. Dipt., 305, 1877.
Cyrtopogon profusus Williston, Trans. Amer. Ent. Soc., v. 11, p. 13, 1884.
Cyrtopogon profusus Back, Trans. Amer. Ent. Soc., v. 35, p. 286–287, 1909.
Cyrtopogon profusus Melander, Psyche, v. 30, p. 10, 1923.

Described from both sexes from Morino Valley, N. Mex., July 1 (W. L. Carpenter); Sangre de Cristo Mountains, July (the same). Williston records it from New Mexico (from Mr. E. Keen); Back records it from Kansas (F. H. Snow). Specimens are on hand from the following localities: Colo.: Colo. 4645; Estes Park, July 1892 (F. H. Snow); Cornet Creek, Telluride, VII-9 '19, F.4375B., about 10,100 feet elevation; Custer County, 9,000 feet, VIII-10 and 11 '28 (R. H. Painter). N. Mex.: Magdalena; Magdalena Mts., VII- '94 (Snow).

Cyrtopogon evidens Osten Sacken (Plate IV)

Cyrtopogon evidens Osten Sacken, West. Dipt., p. 306, 1877.
Cyrtopogon evidens Back, Trans. Amer. Ent. Soc., v. 35, p. 288, 1909.
Cyrtopogon evidens Melander, Psyche, v. 30, p. 109, 1923.

Described from both sexes taken at Webber Lake, Sierra Nevada, Calif., July 22–24 (Osten Sacken). Specimens are at hand from the following localities: Calif.: Angora Lake, Tahoe, VII-28 '15 (M. C. Van Duzee); Crescent Mills, Plumas County (W. J. Chamberlin); Fallen Leaf Lake, VII-4 '14; Fallen Leaf Lake, El

Dorado County, VIII, 1931 (E. C. Van Dyke and O. H. Swezey); Giant Forest, VII-28 '29 (R. H. Beamer, Paul W. Oman, L. D. Anderson); Gold Lake Camp, Plumas County, VII-20 '16 (H. G. Dyar); Lakeside, Tahoe, VI-29 '27 (J. M. Aldrich); Sequoia National Park, elevation 7,000–9,000 feet, VIII-2 '29 (A. T. McClay); Strawberry, VII-6 '19; Tioga Road, VIII-7 (D. G. Hall); Yosemite Valley, VII-12 '24 (E. C. Van Dyke). OREG.: Antelope Mt., Harney County, elevation 6,500 feet, VII-15 '31 (D. K. Frewing); Bull Prairie, Lake County, elevation 7,000 feet, VII-21 to 27 '32 (D. K. Frewing); Crater Lake, elevation 6,000–7,000 feet, VIII-1 and 4 '30 (H. A. Scullen); Ft. Klamath, VII-20 '32 (D. K. Frewing). WASH: Mt. Adams, Signal Peak, elevation 4,500 feet, VII-10 '27 (M. W. Stone).

See note under *swezeyi* and *nugator*.

Cyrtopogon swezeyi, n. sp. (Plate IV)

Female: Length 10 mm. Head grayish pollinose, the front largely brownish. Mystax black, rather sparse and the hairs stronger than usual; hairs of front, vertex, and along the eye margin black, of ocellar tubercle, upper occiput, beard, palpi, and proboscis white. Antennae black, first joint slightly longer than the second, both white haired, the second with a slender black bristle below; third joint $1\frac{3}{5}$ times the length of the first two joints together; style slightly less than one-half the length of the third joint.

Mesonotum grayish pollinose, the central stripes plainly and the intermediate spots indistinctly brown, the central bisecting line yellowish-brown pollinose. The sparse hairs white; the two presutural bristles black. Scutellum slightly convex, the disc gray pollinose, the broad margin black; hairs shorter than usual, white. Pleura and coxae gray pollinose, the hairs entirely white.

Abdomen black, segments 1–5 with entire posterior gray pollinose fasciae; segments 6–8 entirely black; apical spines brown; hairs entirely white, longer on the sides of segments 1–3.

Legs black, the bristles on the femora and tibiae white, excepting those at the apex of the tibiae and a row of short ones dorsally on the fore tibiae, which are black; bristles of tarsi black, several white ones on the metatarsi; claws black, reddish basally; pulvilli and empodium light brownish. Hairs white, on the outer tarsal joints black; the usual golden pile on the fore and hind tibiae and below on the tarsi.

Halteres brown, the base and stem darker. Wings glassy hyaline, the veins brown, anterior crossvein at two-fifths the length of the discal cell.

Holotype: Female, Bryce Canyon, Utah, VI-21 '33 (O. H. Swezey); in the California Academy of Sciences.

Paratypes: Female, Satus Creek, Wash., VII-15 '33 (M. C. Lane), and female, Signal Peak, Wash., Ranger Station, VI-21 '35 (J. Wilcox).

This species is close to *C. evidens* O. S. but the white hairs of the ocellar tubercle, first two antennal joints, mesonotum, scutellum, mesopleura, and tibiae, the largely white bristles of the femora and tibiae, the lack of supra-alar and postalar bristles, and the much less evident intermediate spots of the mesonotum are characters which readily separate it.

Cyrtopogon anomalus Cole (Plate IV)

Cyrtopogon anomalus Cole, Proc. Calif. Acad. Sci., 4th series, v. 11, no. 7, p. 231–232, 1919.

Cyrtopogon anomalus Melander, Psyche, v. 30, p. 109, 1923.

Described from both sexes taken at Hood River, Oreg., VI-13 '17 (F. R. Cole), and Forest Grove, Oreg., July and August. Melander also recorded it from Washington. Specimens are at hand from the following localities: Oreg.: Burnt River, Lime, VI-20 '34 (C. H. and D. Martin); Corvallis (A. C. McCormick); Harper, V-13 '33 (F. H. Shirck); Mehama, VI-19 '32 (J. Wilcox). Wash.: Blewett, V-30, VI-12 and VIII-4 '32 (Wilcox and Martin); Cle Elum, VI-25 '33, VII-4 '32 (Wilcox); Naches, VII-10 '32 (Wilcox); Sumner, VI-17 '32 (Martin and Wilcox). Idaho: Parma, V-13 to VI-15 '34 (C. H. and D. Martin); Horseshoe Bend, Payette River (Martin). British Columbia: Agassiz, VII-15 and 22 '26 (H. H. Ross and R. Glendenning).

Cyrtopogon rattus Osten Sacken (Plate IV)

Cyrtopogon rattus Osten Sacken, West. Dipt., p. 308, 1877.

Cyrtopogon rattus Back, Trans. Amer. Ent. Soc., v. 35, p. 285–286, 1909.

Cyrtopogon rattus Melander, Psyche, v. 30, p. 109, 1923.

Described from both sexes, Webber Lake, Sierra County, Calif., July 22 (Osten Sacken). Specimens on hand from the following localities: Calif.: Strawberry Valley, Eldorado County, VIII-9 '12 (E. C. Van Dyke); Mt. Lassen, elevation 8,000 feet, VII-14 '34 (G. P. Engelhardt); Portola, IX-5 '17; Tuolumne Meadows, Yosem-

ite Park, VII-4 '27 (J. M. Aldrich). OREG.: Strawberry Mt., Grant County, 8,600 feet, VIII-23 to 25 '32 (D. K. Frewing).

See note under *caesius*.

Cyrtopogon caesius Melander

Cyrtopogon caesius Melander, Psyche, v. 30, p. 112–113, 1923.

Described from both sexes taken on the South slope of Mt. Adams, Wash., elevation 4,000 feet, VII-24 '21 (Melander). Specimens are on hand from the following localities: WASH.: Signal Peak, VII-2 '33 (C. H. Martin), and VI-21 '35 (S. E. Crumb, J. Wilcox). OREG.: Crater Lake, south rim, elevation 7,100 feet, VIII-1 '30 (H. A. Scullen) and 6,180 feet, VIII-11 '35 (Geo. Ferguson). WYO.: Green River, VII-2 '20, F. 4737, elevation about 6,100 feet; Rock Springs, VI-28 '20, F. 4738A, elevation about 6,500 feet.

This species may prove to be synonymous with *rattus*. In his key for *rattus* Melander says: "Hypopleural pile black; hairs of hypopygium yellowish white; mystax white; abdomen of both sexes gray except front angles of segments; tibial bristles white except those at tips and on front side of first pair." In his description of *rattus* Osten Sacken says, "The fan-like fringe of hairs in front of the halteres is white. Face and front grayish pollinose, the former with a white mystax; the bristles above the mouth are black . . ."

In a male specimen of *rattus* on hand, the first abdominal segment is entirely pollinose; the second has an anterior pollinose vitta that is narrowly connected with the wide posterior vitta on the dorsum; the third has the anterior and posterior vittae narrowly separated; the fourth has the two vittae more widely separated and the anterior vitta smaller; the fifth has but a very slight trace of the anterior vitta and the posterior vitta is emarginate on its anterior border at the middle; on the sixth the anterior vitta is very small but the posterior vitta covers about three-fourths of the segment, and on the fifth about two-thirds.

Cyrtopogon thompsoni Cole

Cyrtopogon thompsoni Cole, Proc. Calif. Acad. Sci., 4th series, v. 11, no. 15, p. 255–256, 1921.

Cyrtopogon thompsoni Melander, Psyche, v. 30, p. 110, 1923.

Described from a pair of specimens taken at Burns, Oreg., May, 1919 (B. G. Thompson). No other specimens are known. The writers have examined the types and established its close relationship to *ablautoides*, but because of the greased condition of the ab-

domen it cannot be stated that the species are synonymous. The pollinose band on the first abdominal segment of the female is entire; the posterior margin of the scutellum bears several black bristles in addition to the abundant finer white hairs; and the middle tibiae and tarsi of the male bear the prominent tufts of white hairs on the anterior side as described by Melander for *ablautoides*.

See note under *ablautoides*.

Cyrtopogon ablautoides Melander (Plate IV)

Cyrtopogon ablautoides Melander, Psyche, v. 30, p. 111–112, 1923.

Described from both sexes taken at Mabton, Wash., V-3 '11 (Melander); Lind, Wash., May and June (F. W. Carlson); Columbia River near Trinidad, Wash., May 1, 1919, and Wenatchee, Wash., IV-12 (Melander). Specimens are on hand from the following localities: Wash.: Lind, V-15 '26 (M. C. Lane); Moses Coulee, V-7 '33 (J. Wilcox), and IV-28 to V-5 '35 (Itol J. and J. Wilcox).

Enough variation was found in the large series of specimens taken in 1935 so that both species could be segregated; consequently it seems that *ablautoides* at most can be considered but a variety of *thompsoni*.

Cyrtopogon nitidus Cole (Plates I, IV)

Cyrtopogon nitidus Cole, Pan-Pac. Ent., v. 1, p. 10–11, 1924.

Described from both sexes taken at Forks, Clallam County, Wash., VII-4 '20 (E. P. Van Duzee). Besides a paratype, specimens from the following locality are at hand: Wash.: Mt. Rainier, Carbon River, VIII-13 and 23 '33 (R. Latta).

This species has the appearance of a *Dioctria;* however, the very strongly gibbous face prevents it from being included in that genus.

Cyrtopogon tibialis Coquillett (Plate IV)

Cyrtopogon tibialis Coquillett, Proc. Ent. Soc. Wash., v. 6, p. 183, 1904.

Cyrtopogon tibialis Back, Trans. Amer. Ent. Soc., v. 35, p. 285, 1909.

Cyrtopogon tibialis Melander, Psyche, v. 30, p. 109, 1923.

Described from three female specimens from Arizona (H. K. Morrison). The male is described below.

Male: Length 11 mm. Face black, subshining golden-brown pollinose, at most angles with a well defined narrow transverse spot below the antennae; front, ocellar tubercle, and upper occiput yellowish-gray pollinose; lower occiput gray pollinose. Mystax and hairs of front, ocellar tubercle, and a fringe around the eyes black; remainder and larger part of the occipital hairs and beard and hairs of palpi and proboscis white. Antennae black, hairs on the first two joints and a strong bristle below on the second black; first joint slightly longer than the second; the third nearly twice the length of the first two joints together, the lower third much narrower than the apical two-thirds; style about one-third the length of the third joint.

Mesonotum black, subshining laterally, largely dirty grayish pollinose, the central stripes and the larger intermediate area divided by the transverse suture brownish. Hairs fine, black; bristles back, 2 presuturals, 1–2 supra-alars, and 1–2 postalars. Scutellum densely grayish pollinose, sides and narrow apical margin shining black; hairs sparse, fine, black, largely confined to the posterior margin. Pleura and coxae grayish pollinose with a touch of brown on the mesopleura; hairs of the coxae, prothorax, and sternopleura white, of the mesopleura black; hypopleural hairs white, the upper one-third black.

Abdomen shining black; the sides of the first segment, segments 2–4 with very narrowly interrupted posterior fasciae (on segments 2–3 there is a trace of connecting pollen), and segments 5–6 with broadly interrupted posterior fasciae extending anteriorly along the lateral margins gray pollinose. Hairs on the sides of the first three segments rather long, white, on the dorsum very short, white; on the remaining segments very short, black, excepting a few whitish ones on the hind angles of segments 4–5. Genitalia shining black with black hairs, a few yellowish hairs apically and ventrally.

Femora black, reddish-brown below at the apex; basal three-fourths of the tibiae dark reddish-brown above, entirely so below; tarsi black above, reddish-brown below. Hairs of the femora white excepting on the dorsum where they are black; hind tibiae largely white haired but with some black hairs anteriorly and the usual golden pile; middle tibiae entirely black haired; fore tibiae black haired excepting the usual golden pile; tarsi black haired; bristles black; claws white with black tips; empodium and pulvilli white.

Knob of halteres dull yellowish, the remainder brown. Wings clear hyaline basally, with grayish villi apically; veins dark brown, anterior crossvein at the basal one-third of the discal cell.

Described from a male collected at Silver City, N. Mex., VII-9 '33 (R. T. Kellogg); deposited in the U. S. National Museum.

Additional specimens of both sexes with the same data, and VII-16 '32 (R. T. Kellogg); and Globe, Ariz., Sept. (D. K. Duncan).

One of the males and most of the females have the entire venter of the femora reddish-brown; the pollinose bands on the abdomen of the females are about as described for the male; and the hypopleural hairs of the females are entirely white, showing somewhat the same sexual differences with reference to these as *C. rejectus* O. S.

Cyrtopogon lutatius (Walker) (Plates I, IV)

Dasypogon lutatius Walker, List, II, 357, 1849.
Dasypogon lutatius Walker, Can. Ent., III, 142, 1871.
Cyrtopogon lutatius Osten Sacken, Cat., 281, 1878.
Cyrtopogon lutatius Back, Trans. Amer. Ent. Soc., v. 35, p. 265, 1909.
Cyrtopogon lutatius Curran, Can. Ent., v. 55, p. 139–141, 1923.
Cyrtopogon lutatius Melander, Psyche, v. 30, p. 110, 1923.

Back gives the following distribution: Nova Scotia (Walker); Brookline, Mass. (C. W. Johnson), and Chicopee, Mass. (F. Knab); and Cayuga Lake, and Pike, N. Y. Curran describes both sexes from Jordan, Ontario, VI-1 '19, VI-6 '20 (C. H. Curran); Bathurst, New Brunswick, VII-26 (J. N. Knull); Drumgold, Pa., VI-11 '19 (A. B. Champlain); Carlisle Junction, Pa., VI-27 '10. Melander records it also from Maryland and Virginia. Specimens are on hand from the following localities: N. Y.: Alleghany Park, VII-17 '27 (M. C. Van Duzee); Chautauqua County, May and June, 1934 (S. W. Bromley); Cold Spring Harbor, L. I., VI-26 '30 (C. H. Curran); Golden, V-31 '14 (M. C. Van Duzee). N. H.: Franconia (Mrs. A. T. Slosson). Mass.: Blue Hills, No. 220 (Hy. Edwards). Mich.: Douglas Lake, VII-23 '28 (M. W. Boesel). Quebec: Aylmer, VII-4 and 22 '24 (C. H. Curran). Conn.: Union, VII-1 '20.

Cyrtopogon infuscatus Cole (Plates I, IV)

Cyrtopogon infuscatus Cole, Proc. Calif. Acad. Sci., 4th series, v. 9, p. 233, 1919.

Cyrtopogon infuscatus Melander, Psyche, v. 30, p. 110, 1923.

Described from a single male taken at Pamelia Lake, Mt. Jefferson, Oreg., elevation 3,000 feet, VII-12 '07 (J. C. Bridwell). The female is described below.

Female: Length 11 mm. Head black, palpi, proboscis, and cheeks shining; remainder of the head uniformly grayish-white pollinose. Face at the antennae nearly equal to the width of one eye; face extremely gibbous, hemispherical. Sparse mystax black, with a few weaker white hairs intermixed; hairs of front, ocellar tubercle, and occiput, and a sparse fringe around the eyes black; beard and hairs of palpi and proboscis white. Antennae black, first two joints noticeably gray pollinose; first two joints together but slightly less than the length of the third, style one-half the length of the third; hairs on the first two joints sparse, black, a strong black bristle below on the second joint.

Thorax gray pollinose, the central stripes and the intermediate larger spots divided by the transverse suture blackish-brown. Hairs entirely black, a few longer ones on the posterior dorsocentral rows; bristles black, 3–4 presuturals, 5–6 supra-alars, and 5–6 postalars. Scutellum uniformly but not very heavily gray pollinose; hairs black, marginal ones long, disc covered with shorter hairs. Pleura and coxae gray pollinose and white haired excepting a few black hairs on the posterior part of the mesopleura.

Abdomen shining black; sides of the first segment and segments 2–6 with quite broadly interrupted posterior gray pollinose fasciae which on segments 2–5 are broad laterally and more or less acute mesally. Hairs on the sides and lateral margins of the first two segments rather long, white; also a few white hairs on the posterior lateral margins of segments 3–6; remainder of the hairs short, black. Seventh segment entirely black and short white haired; apical spines brownish, with golden hairs at tip of abdomen.

Legs shining black, but a trace of gray pollen. Hairs of the femora and tibiae entirely white excepting a patch of golden pile at the apex of the hind tibiae and on the anterior side of the fore tibiae; hairs of the tarsi black, with golden

pile below; bristles all black. Claws black with narrow reddish-brown bases; pulvilli brown; empodium light brown.

Halteres brown with knob lighter brown. Wings uniformly light grayish-brown, somewhat more intense along the first two veins; veins black, anterior crossvein at one-fourth the length of the discal cell.

Described from a female specimen collected at Sherwood Forest Camp, Mt. Hood, Oreg., VI-26 '32 (J. Wilcox), deposited in the California Academy of Sciences.

Large series of specimens are at hand from the following localities: Calif.: Meadow Valley, Plumas County, elevation 3,500–4,000 feet, VI-16 '24 (E. C. Van Dyke); Fallen Leaf Lake, Lake Tahoe, VI-28 '30 (A. T. McClay). Oreg.: Alsea Mt., VII-4 '30 (J. Wilcox); Bull Prairie, Lake County, elevation 7,000 feet, VII-23 to 27 '32 (D. K. Frewing); Mt. Hood, Sherwood Forest Camp, VI-29 '30, VI-26 '32, VII-17 '33 (J. Wilcox); Strawberry Mt., Grant County, elevation 8,600 feet, VIII-26 to 31 '32 (D. K. Frewing); Sumpter, VI-9 '34 (C. H. Martin). Wash.: Mt. Rainier, White River Camp, VII-30 to IX-11 '32, '33, '34 (Itol J. and J. Wilcox, C. H. and D. Martin); Mt. Rainier, Sunrise, elevation 6,400 feet, VII-27 '32 (Wm. W. Baker); Rainier National Forest, Lodgepole Camp, VIII-16 '32 (Wm. W. Baker); Bumping Lake, IX-5 '32 (Wm. W. Baker); Bumping Lake, IX-5 '32 (J. Wilcox). British Columbia: Steelhead, VII-13 '33 (Hugh B. Leech). Idaho: Long Valley, Alpha, VII-1 '34 (Dorothy Martin).

Cyrtopogon fumipennis, n. sp. (Plates I, IV)

Male: Length 9 mm. Face, front, ocellar tubercle, vertex, and occiput yellowish-gray pollinose, lower occiput gray pollinose; palpi and proboscis black. Mystax black, a few whitish hairs at the middle; hairs of front, vertex, ocellar tubercle, upper occiput, narrowly along the eye margin, and on the second joint of the palpi black; beard and hairs of the proboscis and first joint of the palpi white. Antennae black, first two joints subequal in length, and black haired; third joint $1\frac{1}{2}$ times the length of the first two joints together, widest at the apical two-thirds; style slightly more than one-third the length of the third joint.

Mesonotum yellowish-gray pollinose, with a broad central stripe and large anterior and smaller posterior intermediate spots brown pollinose, subshining, the anterior spots narrowly confluent with the central stripes. Hairs black; bristles black,

2 presuturals, 4 fine supra-alars, and 2 postalars. The disc and posterior margin of the scutellum grayish-yellow pollinose, the side of the disc shining black; hairs sparse, black. Pleura and coxae yellowish-gray pollinose, the lower portion of the mesopleura shining black; hairs white, 3–4 black ones mixed in with the upper hypopleurals.

Abdomen shining black, sides of the first segment and segments 2–6 with very broadly interrupted posterior gray pollinose fasciae, the seventh segment and the genitalia entirely black. Long hairs on the sides of the first two segments and posteriorly on the sides of segments 3–6 white; otherwise black, short on the sides and very short on the dorsum; genitalia black haired.

Legs black; bristles black; claws black, the bases reddish; pulvilli and empodium brown. Hairs of the femora and tibiae white, of the tarsi black.

Halteres yellowish-white, the base and stem brown. Wings infuscated, the apical part beginning at the discal cell darker, and a darker cloud at the base of the first submarginal cell extending through the marginal cell into the subcostal cell; veins dark brown; anterior crossvein at about one-sixth the length of the discal cell.

Female: Length 9 mm. Very similar. Style more than one-half the length of the third joint. Hypopleural hairs entirely white. Only the posterior corner of the sixth abdominal segment pollinose, segments 7–8 entirely black, apical spines brown.

Holotype: Male, Mt. Rainier, Wash., White River Camp, VII-30 '33 (C. H. Martin), deposited in the California Academy of Sciences.

Allotype: Female, same data, VI-17 '34 (J. Wilcox); deposited in the California Academy of Sciences.

Paratypes: 1 male, 2 females from type locality, IX-4 '32, VII-30 and VIII-20 '33 (C. H. and D. Martin and J. Wilcox); 1 male, Signal Peak, Wash., Ranger Station, VII-20 '33 (P. M. Eide); 1 female, Mt. Adams, Wash., Yakima Indian Forest Reservation, elevation 3,000 feet, VI-30 '25 (E. C. Van Dyke); 1 male. 4 females, Long Valley, Alpha, Idaho, VI-10 to VII-1 '34 (C. H. and D. Martin); in the writers' collections; female, Pruest Lake, Idaho, 1923 (C. V. Piper), in the U. S. National Museum; female, Sugar Lake, British Columbia, IV-5 '24 (E. R. Buchell), in the Canadian National Collection.

Cyrtopogon rejectus Osten Sacken (Plates I, V)

Cyrtopogon rejectus Osten Sacken, West. Dipt., p. 307, 1877.
Cyrtopogon positivus Osten Sacken, West. Dipt., p. 307, 1877.
Cyrtopogon rejectus Back, Trans. Amer. Ent. Soc., v. 35, p. 289, 1909.
Cyrtopogon positivus Back, Trans, Amer. Ent. Soc., v. 35, p. 290–291, 1909.
Cyrtopogon rejectus Melander, Psyche, v. 30, p. 110, 1923.
Cyrtopogon positivus Melander, Psyche, v. 30, p. 110, 1923.

Cyrtopogon rejectus was described from four female specimens from Webber Lake, Sierra County, Calif., July 22–24, and Summit Station, Central Pacific Railroad, Calif., July 17 (Osten Sacken); and *positivus* from three male specimens from the same locality although Back gives records from Moscow, Idaho (F. H. Snow), and Cloudcroft, N. Mex. (May 17, 23, 27). Melander also records it from Arizona and Oregon. A pair were taken in copula by the writers, making the above synonymy necessary, and besides, there is no question of the close relationship in spite of the difference in the color of the hypopleural hairs. Specimens are at hand from the following localities: Calif.: Calaveras Big Trees, VI-7 '31 (E. C. Van Dyke); Giant Forest, VII-28 '29 (R. H. Beamer and P. W. Oman; Gold Lake Camp, Plumas County, VII-19 '16 (H. G. Dyar); Meadow Valley, Plumas County, elevation 3,500–5,000 feet, VI-8 to 15 '24 (E. C. Van Dyke); Truckee, VI-17 '27 (E. P. Van Duzee); Yosemite Valley, VII-7 '21 (E. C. Van Dyke). Oreg.: Antelope Mt., Harney County, elevation 6,500 feet, VII-13 and 25 '31 (D. K. Frewing); Diamond Lake, Douglas County, VII-17 '34 (E. C. Van Dyke); Hart Mt., Lake County, elevation 7,000 feet, VIII-2 '32 (D. K. Frewing); Hood River, VII-1 '17 (L. Childs); Mt. Hood, Sherwood Forest Camp, VI-26 '33 (J. Wilcox); North Fork Malheur River, Harney County, elevation 4,400 feet, VIII-11 '32 (D. K. Frewing). Wash.: Mt. Adams, Klickitat River, elevation 3,000 feet, VII-16 '33 (J. Wilcox); Mt. Rainier, White River Camp, IX-14 '32 and VIII-20 '33 (Wm. W. Baker, Martin and Wilcox); Yelm, VII-15 '33 (Martin). Idaho: Long Valley, Alpha, VI-10 to VII-1 '34 (C. H. and D. Martin).

Cyrtopogon sudator Osten Sacken (Plates I, III, V)

Cyrtopogon sudator Osten Sacken, West. Dipt., p. 307, 1877.
Cyrtopogon sudator Back, Trans. Amer. Ent. Soc., v. 35, p. 29, 1909.
Cyrtopogon sudator Melander, Psyche, v. 30, p. 110, 1923.

Described from both sexes taken at Webber Lake, Sierra County, Calif., July 22–24, and Summit Station, Central Pacific Railroad, Calif., July 17 (Osten Sacken). Melander also records it from Oregon and Washington. Specimens are on hand from the following localities: CALIF.: Lake Tahoe, VI-22 and 26 '25 (E. N. Nast); Sequoia National Park, elevation 7,000–9,000 feet, VI-26 '29 (A. T. McClay); Truckee, VI-12 and 18 '27 (H. and E. P. Van Duzee), and VII-2 '34 (M. W. Stone); Yosemite Valley, VII-5 '21 (E. C. Van Dyke). IDAHO: Moscow Mts., VI-26 (F. M. Hull). OREG.: Antelope Mt., Harney County, elevation 6,500 feet, VII-14 '31 (D. K. Frewing). WASH.: Mt. Adams, elevation 6,000 feet, VII-3 '25 (M. C. Lane); Mt. Adams, Signal Peak, elevation 4,500 feet, VII-10 '27 (F. H. Shirck); Mt. Rainier, Sunrise, elevation 6,400 feet, VII-27 to IX-14 '32 (S. E. Crumb, Wm. W. Baker, Itol J. and J. Wilcox, C. H. and D. Martin); Mt. Rainier, White River Camp, IX-7 '32 (Wilcox); Signal Peak, Ranger Station, VII-2 '33 (C. H. and D. Martin). BRITISH COLUMBIA: Kaslo, VII-21 '08 (J. W. Cockle).

See note under *curtipennis*.

Cyrtopogon curtipennis, n. sp. (Plates III, V)

Male: Length 9 mm. Face shining black, thinly golden-brown pollinose with a large transverse spot below the antennae; front and ocellar tubercle thinly, vertex and occiput densely, gray pollinose. Mystax black; hairs of front, vertex, ocellar tubercle, and narrowly around the eyes black; hairs of occiput, palpi, and proboscis white. Antennae black, first two joints subequal in length, both black haired, the second below with a black bristle; third joint 1½ times the length of the first two joints together, broadest at the apical two-thirds, strongly narrowed on about the basal one-third; style one-half the length of the third joint.

Mesonotum gray pollinose, the central stripes and intermediate spots light brownish pollinose. Hairs black; bristles black, 2–3 presuturals, 2 supra-alars, and 1 postalar. Scutellum flattened, densely gray pollinose, the narrow margin shining black; the sparse, fine hairs black. Mesopleura golden-brown, remainder of pleura yellowish-gray, and the coxae gray, pollinose; hairs white excepting the black mesopleurals and the hypopleurals black anteriorly and white posteriorly.

Abdomen shining black, the sides of the first segment, and segments 2–5 with narrow posterior fasciae gray pollinose, the

one on segment 2 narrowly connected at the middle, the others narrowly interrupted. Hairs white, long on the sides of segments 1–2, short otherwise. Genitalia black and short black haired.

Legs black; bristles black, the fore tibiae posteriorly and ventrally with quite a long dense fringe of bristle-like hairs which are 3 or 4 times the diameter of the tibiae; claws black with reddish bases; pulvilli light brown; empodium reddish. Hairs black; the fore femora posteriorly, the middle femora posteriorly and ventrally, and the hind femora entirely white haired; the usual pile anteriorly on the fore tibiae and posteriorly on the hind tibiae golden.

Halteres yellowish-white, the base and stem brown. Wings shorter and broader than usual; hyaline basally, lightly infuscated apically with a definite brown cloud extending from the anterior crossvein to the apex of the auxiliary vein, darker and elongate in the subcostal and marginal cells; veins dark brown, anterior crossvein at one-fourth the length of the discal cell; fourth posterior cell slightly narrowed.

Female: Length 9 mm. Face grayish-yellow pollinose with a transverse spot of gray below the antennae, the face subshining brownish-black at the angle where the spot is most apparent. The pollinose bands on abdominal segments 2–4 narrowly interrupted and on segment 5 quite broadly interrupted; apical spines brown. On the fore tibiae posteriorly there is a double row of sparse, stout, fairly long, black bristles, and ventrally some black hairs about one-half the length of those in the males.

Holotype: Male, Carrville, Trinity County, Calif., elevation 2,400–2,500 feet, VI-1 '34 (E. C. Van Dyke); in the California Academy of Sciences.

Allotype: Female, with same data; in the California Academy of Sciences.

Paratypes: 2 males with same data and 1 female with same data, V-25 '34, in the writers' collections.

Most closely related to *C. sudator* O. S. It differs in the shorter, broader, and infuscated wings and less broad face and front (in male two-thirds the width of one eye, in female four-fifths; *sudator*, in male six-sevenths, in female subequal), and lacks the dense white pollen of the front and anterior portion of the mesonotum of *sudator*.

Cyrtopogon vanduzeei, n. sp. (Plate V)

Male: Length 8 mm. Face, front, vertex, and ocellar tubercle densely silvery-white pollinose; the occiput gray pollinose; palpi and proboscis black. Mystax white, the hairs on the sides and oral margin black; hairs otherwise black, excepting the beard, which is white. Face at the antennae three-fourths the width of one eye, noticeably divergent below. Antennae black; first and second joints short, subequal in length, black haired; the third joint $1\frac{2}{5}$ times the length of the first two joints together, broadest just beyond the middle; style one-half the length of the third joint.

Mesonotum black, the humeri and anterior portion densely silvery-white pollinose, the intermediate spots before and behind the suture brownish pollinose, the remainder gray pollinose, the lateral margins subshining black. Hairs black; bristles fine, black; 2 presuturals, 2 supra-alars, and 3–4 very fine postalars. Disc of the scutellum yellowish-gray pollinose, the posterior margin broadly shining black, hairs black. Pleura and coxae yellowish-gray pollinose, hairs of the pronotum, propleura, and coxae white, of the mesopleura and hypopleura black, sternopleural hairs yellowish and brown.

Abdomen shining black, the sides of the first segment gray pollinose, segments 2–6 with narrow, broadly interrupted, posterior grayish pollinose fasciae, segments 4–6 with indistinct anterior narrow brownish-gray pollinose fasciae broadly separated from the lateral margins; seventh segment and genitalia black with some faint pollen dorsally. Hairs yellowish, long on the sides of the first three segments; genitalia short black haired.

Legs black; bristles black; claws black, reddish basally; pulvilli and empodium brownish. Hairs of the fore femora black, whitish posteriorly; middle femora black haired anteriorly and dorsally, whitish haired otherwise; hind femora whitish haired with short black hairs dorsally; tibiae and tarsi black haired with the usual golden pile anteriorly on the fore tibiae and posteriorly on the hind tibiae.

Halteres dull yellowish, the base brown. Wings infuscated, darker apically, veins brown, anterior crossvein slightly before the middle of the discal cell.

Female: Length 9 mm. Mystax largely black with a number of white hairs at the middle; face and front white pollinose, occiput light yellowish-brown pollinose. Mesonotum

silvery white pollinose anteriorly, the broad central stripe more or less confluent with the intermediate spots, light brownish pollinose. Abdomen with the sides of the first segment and segments 2–4 with narrowly interrupted posterior gray pollinose fasciae, the fasciae on 5 broadly interrupted; segments 6–8 black, the apical spines brown; hairs white, long on the sides of segments 1–2, shorter on 3, and very short and inconspicuous on the remaining segments. Wings hyaline, infuscated anteriorly and apically, anterior crossvein at about two-fifths the length of the discal cell.

Holotype: Male, Glen Alpine, Tahoe, Calif., VI-29 '29 (E. P. Van Duzee); in the California Academy of Sciences.

Allotype: Female, Hood River, Oreg., VI-2 '17 (L. Childs); in the California Academy of Sciences.

Paratypes: Male, same as holotype; male, Tenino, Wash., V-15 '32 (C. H. Martin); male, Puyallup, Wash., VI-12 '33, and female, V-26 '35 (Wilcox); female, near Long Barn, Tuolumne County, Calif., Bald Mt., elevation 5,600 feet, IV-20 '34 (E. P. Van Duzee); female, same data as allotype, VII-12 '17; female, Olympia, Wash., V-29 '33 (Martin), and 3 males and 2 females, Satus Pass, Wash., VI-23 '35 (S. E. Crumb and Wilcox).

See note under *rainieri*.

Cyrtopogon rainieri, n. sp. (Plate V)

Male: Length 7.5 mm. Face white, front and ocellar tubercle whitish-yellow, vertex and upper occiput grayish-yellow, and lower occiput gray, pollinose. Mystax black, the lower hairs whitish at the tip; hairs of front, ocellar tubercle, vertex, upper occiput, along the eye margin, palpi, and proboscis black; beard white. Antennae black, first joint slightly longer than the second, both black haired; the third $1\frac{2}{5}$ times the length of the first two joints together, widest at the apical two-thirds; style one-third the length of the third joint.

Humeri, anterior portion of the mesonotum, and the broad central stripe extending nearly to the suture densely whitish-yellow pollinose, the dorsocentral stripes and the lateral margins dark brown, subshining; small intermediate spot brownish pollinose. Hairs black; bristles slender, black, 2–3 presuturals, 1 supra-alar, and 2 postalars. Scutellum slightly convex, the disc yellowish pollinose, the broad margin shining black, the hairs black. Pleura and coxae gray pollinose with brownish areas on the pleura; hairs of mesopleura and hypopleura black, otherwise white.

Abdomen black, sides of the first segment and segments 2–6 with rather broadly interrupted posterior grayish-brown pollinose fasciae, segment 5 with an indistinct brownish anterior fascia not reaching the sides, and segment 6 appearing entirely light brownish pollinose at some angles; segment 7 and the genitalia black. Hairs on the sides of segments 1–4 white, long on segments 1–3; on the dorsum of 4 and on the remaining segments and the genitalia short black.

Legs black; bristles black; claws black, reddish basally; pulvilli and empodium light brownish. Hairs black, below on the hind femora and a few below on the middle femora whitish; the usual golden pile on the fore and hind tibiae, and below on the tarsi.

Halteres dull yellowish-brown, the base brown. Wings slightly infuscated, the basal and anal cells hyaline; veins dark brown, anterior crossvein at three-sevenths the length of the discal cell.

Female: Length 9 mm. Head grayish-yellow pollinose, mystax black. Humeri and anterior portion of the mesonotum dull grayish pollinose, the central stripe, the dorsocentral stripes, and the intermediate spots golden-brown pollinose. Sides of the first abdominal segment and segments 2–5 with posterior gray pollinose fasciae narrowly interrupted at the middle, segments 6–8 entirely black, apical spines brown. Anterior crossvein at the middle of the discal cell.

Holotype: Male, Mt. Rainier, White River Camp, VII-30 '33 (Itol J. Wilcox); deposited in the California Academy of Sciences.

Allotype: Female, same data (Dorothy Martin); deposited in the California Academy of Sciences.

Paratypes: Male and female, with same data (Martin and Wilcox), 2 males and 1 female, same data, IX-2 '32, VII-20 '35 and VI-17 '34 with (Wilcox); male, Hood River, Oreg., VI-8 '17 (L. Childs); female, Mt. Hood, Oreg., Sherwood Forest Camp, VI-26 '32 (Wilcox).

This species is very close to *vanduzeei*, differing by the black mystax, longer first antennal joint, and by the hairs on the fore femora in the females being largely black, while in *vanduzeei* they are white posteriorly. The face of *vanduzeei* is quite divergent below and slightly broader.

Cyrtopogon nugator Osten Sacken (Plate V)

Cyrtopogon nugator Osten Sacken, West. Dipt., p. 307, 1877.

Cyrtopogon nugator Williston, Trans. Amer. Ent. Soc., v. 11, p. 13, 1884.

Cyrtopogon nugator Back, Trans. Amer. Ent. Soc., v. 35, p. 289–290, 1909.

Cyrtopogon nugator Curran, Can. Ent., v. 55, p. 138, 1923.

Cyrtopogon nugator Melander, Psyche, v. 55, p. 110, 1923.

Described from both sexes taken at Webber Lake, Sierra County, Calif., July 22–24 (Osten Sacken). Williston records it from Oregon, Back from New Mexico, Curran from British Columbia, and Melander from Washington and Idaho. Specimens are on hand from the following localities: Calif.: Grass Lake, Tahoe (M. C. Van Duzee); Tioga Road, VIII-7 (Hall and Hall); Yosemite Valley, VII-12 '21 (E. C. Van Dyke). Oreg.: Homestead Inn, Mt. Hood, VII-2 '27 (E. C. Van Dyke). Wash.: Signal Peak, Ranger Station, VII-16 '33 (Wilcox), VII-21 '34 (Wm. W. Baker); Rainier National Forest, Lodgepole Camp, IX-8 '35 (S. E. Crumb, Baker, Wilcox). Idaho: Lake Waha, VI-18 '30 (J. M. Aldrich).

This species has the claws white with black tips, and the tibiae black haired. The Idaho specimens listed above may prove to be distinct, as they have the hind tibiae white haired. In a few specimens, the pollinose fasciae on the first abdominal segment is entire, in which case it might be confused with *evidens*, the white claws however will readily separate them.

See note under *banksi*.

Cyrtopogon sansoni Curran

Cyrtopogon sansoni Curran, Can. Ent., v. 55, p. 138–139, 1923.

Described from a male and female specimen taken at Banff, Alberta, VII-5 '15 (N. B. Sanson), and VII-9 '16 (C. G. Hewitt). We have not recognized this species in our material.

Cyrtopogon banski, n. sp.

Male: Length 10 mm. Face black with a transverse spot of golden pollen below the antennae; front and occiput grayish pollinose; palpi and proboscis shining black. Hairs black, those of the occiput and below on the proboscis white; the orbital fringe, as usual, black. Antennae black, the first joint slightly longer than the second, both black haired, the second with an apical bristle below; third joint one and three-fourths times the length of the first two joints together; the style one-third the length of the third joint.

Mesonotum grayish pollinose, the central stripes, abbrevi-

ated anteriorly and posteriorly, and the intermediate spots, brownish pollinose; and behind the suture, on each side, a small shining black spot. Hairs black; bristles black, 2 presuturals, 3–4 supra-alars, and 3–4 postalars. Scutellum flattened, the disc grayish pollinose, the margin shining black; hairs black. Pleura and coxae grayish pollinose; hairs white, a few intermixed on the propleura, the mesopleura entirely, and a few above on the sternopleura black.

Abdomen shining black, the sides of the first segment and segments 2–6 with posterior grayish pollinose fasciae, on segment 2 entire, on 3–4 narrowly interrupted, and on 5–6 broadly interrupted. Hairs on the sides and lateral margins of segments 1–3 quite long and dense, those on the lateral margins of the remaining segments and the hairs arising from the pollinose fasciae white; otherwise the hairs of the dorsum short, black. Genitalia shining black, short white haired.

Legs black; bristles black; apical one-half of claws black, basally reddish; pulvilli brownish. Fore femora dorsally and posteriorly, and the middle femora dorsally, black haired, otherwise femora white haired; fore tibiae black haired excepting for the usual golden anterior pile; middle tibiae black haired but with some short recumbent white hairs anteriorly and posteriorly; hind tibiae white haired exclusive of the apical golden pile; the tarsi short black haired.

Knob of halteres yellowish red, the base and stem brown. Wings glassy hyaline, the veins dark brown, the anterior crossvein at about two-fifths the length of the discal cell.

Female: Length 10 mm. Similar. Face grayish pollinose. Propleura and sternopleura white haired. Abdomen with posterior gray pollinose bands, those on segments 1, 4 and 5 broadly, and on 6 very broadly, interrupted, and those on segments 2–3 entire; segments 7–8 entirely black; apical spines black; hairs white. Fore femora largely posteriorly, middle femora entirely, fore tibiae posteriorly, and middle and hind tibiae entirely white haired.

Holotype: Male, Puyallup, Wash., VI-3 '33 (J. Wilcox); deposited in the California Academy of Sciences.

Allotype: Female, same data, VI-19 '33; deposited in the California Academy of Sciences.

Paratypes: more than 200 specimens from the following localities: Wash.: Type locality, V-26 to VIII-8 '32, '33, and '35 (Wm. W. Baker, R. T. Webber, Wilcox and Martin); Cle Elum, VII-4

'32 (Wilcox); Jefferson County, Mt. Steel, elevation 4,500 feet, VII-17 '19 (F. M. Gaige) and Mason County, Lake Cushman, VII-8 '19 (F. M. Gaige), in Ohio State Museum; Mt. Adams, Klickitat River, VI-21 '35 (Wilcox); Mt. Rainier, Sunrise, VII-17 '34 and VIII-8 '35 (Wilcox); Mt. Rainier, White River Camp, VII-27 and IX-14 '32 and VIII-7 '35 (Martin and Wilcox); Olympia, V-14 to VI-25 '32 and '33 (Martin and Wilcox); Signal Peak, Ranger Station, VII-16 '33 and VI-21 '35 (Wilcox); Spanaway, VI-12 and 30 '32 (Baker and Wilcox); Sumner, VI-9 to 28 '32 (Martin and Wilcox); Tacoma, VI-2 '33 (Wilcox) and VI-16 '35 (R. T. Webber and Baker); Tenino, V-15 '32 (Martin); Uncas, VIII-2 '32 (Wilcox and Martin); Virden, VII-4 '32 (Wilcox); White Rock Spg., Stevens Pass, Cascade Mts., VII-14 '30 (E. C. Van Dyke); Yelm, VI-9 '33 (Wilcox). Oreg.: Antelope Mt., Harney County, elevation 6,500 feet, VII-11 to VIII-15 '31 (D. K. Frewing); Diamond Lake, Douglas County, VII-17 '34 (E. C. Van Dyke); Mt. Hood, Homestead Inn, VI-6 '27 (E. C. Van Dyke); Mt. Hood, elevation 3,000–6,000 feet, VI-22 '25 (E. C. Van Dyke); near La Grande, VII-4 '23 (W. J. Chamberlin); North Fork of Malheur River, Harney County, elevation 5,500 feet, VIII-17 '32 (D. K. Frewing); Mt. Hood, Sherwood Forest Camp, VI-26 '32 (Wilcox); Strawberry Mt., Grant County, elevation 8,600 feet, VIII-25 and IX-2 '32 (D. K. Frewing). Calif.: Lake Tahoe, Grass Lake (M. C. Van Duzee); Yosemite Valley, VII-12 '21 (E. C. Van Dyke). British Columbia: Departure Bay, VI-13 '08; Malakua Hill, VIII-8 '23 (E. R. Buckell); in the Canadian National Collection. Yukon Territory: Whitehorse, Fish Lake Bench, VI-16 '23 (J. A. Kusche). Idaho: Long Valley, Alpha, VI-10 to VIII-11 '34 (C. H. and D. Martin). Colo.: Roan Mts., above Ute trail, July (Cockerell), in the U. S. National Museum; Aspen, VII-24 '19, 8,000 feet, in American Museum of Natural History. Wyo.: Jackson, VII-13 to 17 '20, F.4746, elevation about 6,000 feet, in American Museum of Natural History.

This is the species we have previously identified as *nugator*. Specimens were sent to Mr. Nathan Banks who kindly compared them with the types of *nugator* and thought it to be distinct. Besides the characters given in the key, the face is broader; male *nugator,* face 23, eye 39 (male *banksi,* 27–38), female *nugator* 25–37 (female *banksi,* 29–39).

This is apparently the species from British Columbia referred to as *nugator* by Curran.

Cyrtopogon idahoensis, n. sp. (Plate V)

Male: Length 9 mm. Face black, reddish-brown pollinose but at most angles appearing black with a narrow transverse reddish-brown stripe below the antennae, five-sevenths the width of one eye; remainder of the head grayish pollinose; palpi and proboscis black. Mystax and hairs of front, vertex, ocellar tubercle, and a narrow fringe around the eyes black; occipital hairs, the beard, and those on the palpi and proboscis white. Antennae black; first joint slightly longer than the second, both sparse black haired; the third $1\frac{1}{2}$ times the length of the first two joints together, widest at the apical three-fourths; style nearly one-half the length of the third joint.

Mesonotum densely grayish pollinose with a slight yellowish tinge, the narrow central stripes and the round intermediate spots before and behind the suture on each side brown pollinose, and with a round shining black spot laterally on each side behind the suture. Hairs on the humeri and anteriorly on the notum white, otherwise black; bristles slender, black; 1 presutural, 1 supra-alar, and 1 postalar. Scutellum densely gray pollinose, the margin shining black; the hairs white, several fine black ones on the posterior margin. Pleura and coxae grayish-yellow pollinose, the hairs entirely white.

Abdomen shining bluish-black, all segments with posterior grayish-yellow pollinose bands, those on the first broadly interrupted, on segments 2–3 narrowly, and on the remaining segments the interruption increasing in extent apically, the bands on segments 2–7 extending narrowly along the sides to the anterior margins. Hairs white, long on the sides of the first three segments. Genitalia shining black, short white haired.

Legs black; the bristles black; basal half of the claws yellowish-brown, black apically; pulvilli and empodium yellowish-brown. Hairs of the femora, middle and hind tibiae, and the basal joints of the hind tarsi white, otherwise black, some black hairs below on the middle tibiae.

Halteres whitish, the base and stem dark brown. Wings hyaline, the veins brown, anterior crossvein at three-tenths the length of the discal cell.

Female: Length 9 mm. Similar. Face grayish-yellow pollinose, four-fifths the width of one eye, hairs below on the first antennal joint white. Two presutural, 2–3 supra-alar, and 2 postalar bristles. Abdomen with posterior pollinose bands

similar to those of the male on segments 1–6, segments 7–8 entirely black, apical spines black. Anterior crossvein at five-elevenths the length of the discal cell.

Holotype: Male, Parma, Idaho, V-13 '34 (C. H. Martin); deposited in the California Academy of Sciences.

Allotype: Female, same data; deposited in the California Academy of Sciences.

Paratypes: 4 specimens of both sexes, with same data, and 3 of both sexes from the same locality, V-12 and 13 '33 (F. H. Shirck and M. C. Lane); and one specimen, Ogden, Utah, VII-25 '20, elevation 4,300 feet, in the American Museum of Natural History.

Cyrtopogon albifrons, n. sp. (Plates I, V)

Male: Length 9 mm. Face thinly golden pollinose, subshining black; front and ocellar tubercle densely white pollinose; vertex and occiput gray pollinose; palpi and proboscis black. Mystax, and hairs of front, ocellar tubercle, vertex, and along the eye margins, black; long hairs on upper occiput, beard, and hairs below on the proboscis white. Antennae black; the first joint slightly longer than the second, both black haired, 2–3 long hairs below apically on the second joint; third joint $1\frac{1}{3}$ times the length of the first two joints together, widest at the apical two-thirds; style about one-third the length of the third joint.

Mesonotum densely grayish-white pollinose, especially anteriorly; the narrow central stripes and the intermediate spots brown, faintly apparent. Hairs black; bristles black, 2 presuturals, 2 supra-alars, and 2 postalars. Disc of scutellum yellowish-gray pollinose, posterior margin black; hairs black. Pleura and coxae grayish pollinose, the hairs (excepting the mesopleurals, which are black) white.

Abdomen shining black; the sides of the first segment, segments 2–5 with broadly interrupted posterior fasciae, and the hind angles of the sixth segment gray pollinose. Hairs on the sides of segment 1–3 long, shorter on the sides of segment 4 and on the posterior corners of segment 5, white; otherwise short, black. Genitalia shining black and black haired.

Legs black; bristles black; claws black with reddish bases; empodium and pulvilli brown. Long white hairs on femora, short black haired dorsally; tibiae and tarsi, excepting the usual orange pile, black haired.

Halteres yellowish-white, the base and stem brown. The

wings uniformly infuscated, the veins dark brown; anterior crossvein about one-fourth the length of the discal cell.

Female: Length 9 mm. Similar. Face densely grayish-yellow pollinose; front densely grayish pollinose. Posterior gray pollinose fasciae of abdominal segments 2–4 narrowly and on segment 5 rather broadly interrupted; segments 6–8 entirely black; apical spines black; hairs entirely white. Anterior crossvein at one-third the length of the discal cell.

Holotype: Male, Long Valley, Alpha, Idaho, VI-10 '34 (C. H. Martin); deposited in the California Academy of Sciences.

Allotype: Female, same data, V-27 '34 (Dorothy Martin); deposited in the California Academy of Sciences.

Paratypes: 34 specimens, of both sexes, from the type locality, V-20 to VI-24 '34 (C. H. and D. Martin); and 1 male, Wallowa Lake, Oreg., Aneroid Lake Trail, elevation 6,200 feet, VII-22 '29 (H. A. Scullen).

Cyrtopogon beameri, n. sp. (Plate V)

Male: Length 10 mm. Face, palpi, and proboscis black; the face with a faint transverse spot of orange below the antennae; front and ocellar tubercle densely yellowish-gray pollinose; the occiput gray pollinose. Mystax, and hairs of the front, ocellar tubercle, vertex, and rather broadly around the eye margin black; occipital hairs, beard, and the hairs of the proboscis white. Antennae black, first and second joints subequal in length, both black haired, the second joint with 1–2 bristle-like ones apically; third joint $1\frac{2}{3}$ times the length of the first two joints together, widest at the apical three-fourths; style one-third the length of the third joint.

Mesonotum grayish-yellow pollinose, the central stripes plainly and the intermediate spots indistinctly brown. Hairs black; bristles black, 4 presuturals, 3 supra-alars, and 3–4 postalars. Disc of the scutellum densely yellowish-gray pollinose, posterior margin broadly black, the hairs black. Pleura and coxae yellowish-gray pollinose, the hairs white, those on the mesopleura black, rather long.

Abdomen shining black; sides of the first segment, the posterior margins of segment 2–5, and the hind angles of the sixth segment gray pollinose, the fascia on the second segment entire but slightly constricted dorsally, those on segments 3–4 narrowly interrupted. The hairs on the sides of segments 1–5 white, long on segments 1–3, the remainder of the hairs short,

black. Genitalia black and black haired, the hairs on the surstyli golden.

Legs black; bristles black; basal half of the claws yellowish, the apical half black; pulvilli brown; empodium whitish. The middle femora posteriorly and the hind femora dorsally white haired, the remainder of the legs black haired.

Halteres yellow, the base and lower stem brown. Wings lightly infuscated, part of the basal cells hyaline; the veins dark brown, anterior crossvein at about one-third the length of the discal cell.

Female: Length 12 mm. Similar. Face densely yellowish-gray pollinose. The mesopleura yellowish haired anteriorly, brownish haired posteriorly. The sides of the first segment and segments 2–5 with posterior grayish pollinose fasciae, the fasciae on the second segment very narrowly interrupted; segments 6–8 entirely black; the apical spines brown; the hairs entirely white, long only on the sides of segments 1–2. The fore femora posteriorly and anteriorly, and the middle and hind femora and tibiae largely white haired. Wings more densely infuscated, anterior crossvein at about two-sevenths the length of the discal cell.

Holotype: Male, Chiricahua Mts., Ariz., VI-9 '33 (R. H. Beamer); in the Snow Collection, University of Kansas.

Allotype: Female, same data, VII-8 '32; in the Snow Collection, University of Kansas.

Paratypes: 14 specimens of both sexes with same data as the types; in the Snow Collection, University of Kansas, and in the writers' collections; and 1 female, Mt. Lemmon, Santa Catalina Mts., Ariz., elevation 7,000 feet, VII-29 '17, in Dr. S. W. Bromley's collection.

Plate I

Side View of Heads of *Cyrtopogon* Species

C. **fumipennis,** n. sp.
C. rejectus O. S.
C. **albifrons,** n. sp.
C. lutatius (Walk.)
C. nitidus Cole
C. sudator O. S.
C. infuscatus Cole
C. lineotarsus Curran

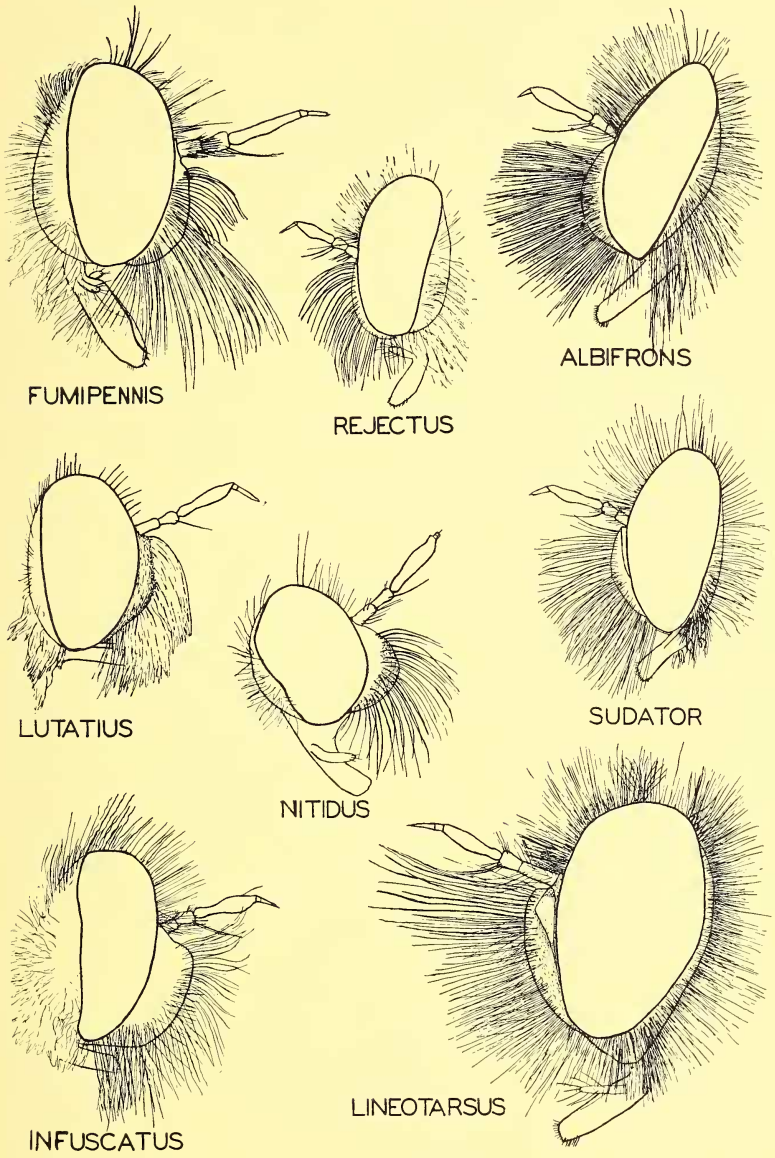
FUMIPENNIS
REJECTUS
ALBIFRONS
LUTATIUS
NITIDUS
SUDATOR
INFUSCATUS
LINEOTARSUS

Plate II

Tarsi of Fore and Middle Legs of *Cyrtopogon* Species

C. plausor O. S.
- A, Tarsi of fore leg of male
- B, Tarsi of middle leg of male

C. praepes Will.
- A, Tarsi of fore leg of male
- B, Tarsi of middle leg of male
- C, Tarsus of fore leg of female

C. willistoni Curran
- A, Tarsi of fore leg of male
- B, Tarsi of middle leg of male

C. callipedilus Loew
- A, Tarsi of fore leg of male
- B, Tarsi of middle leg of male

C. cymbalista O. S.
- A, Tarsi of fore leg of male
- B, Tarsi of middle leg of male

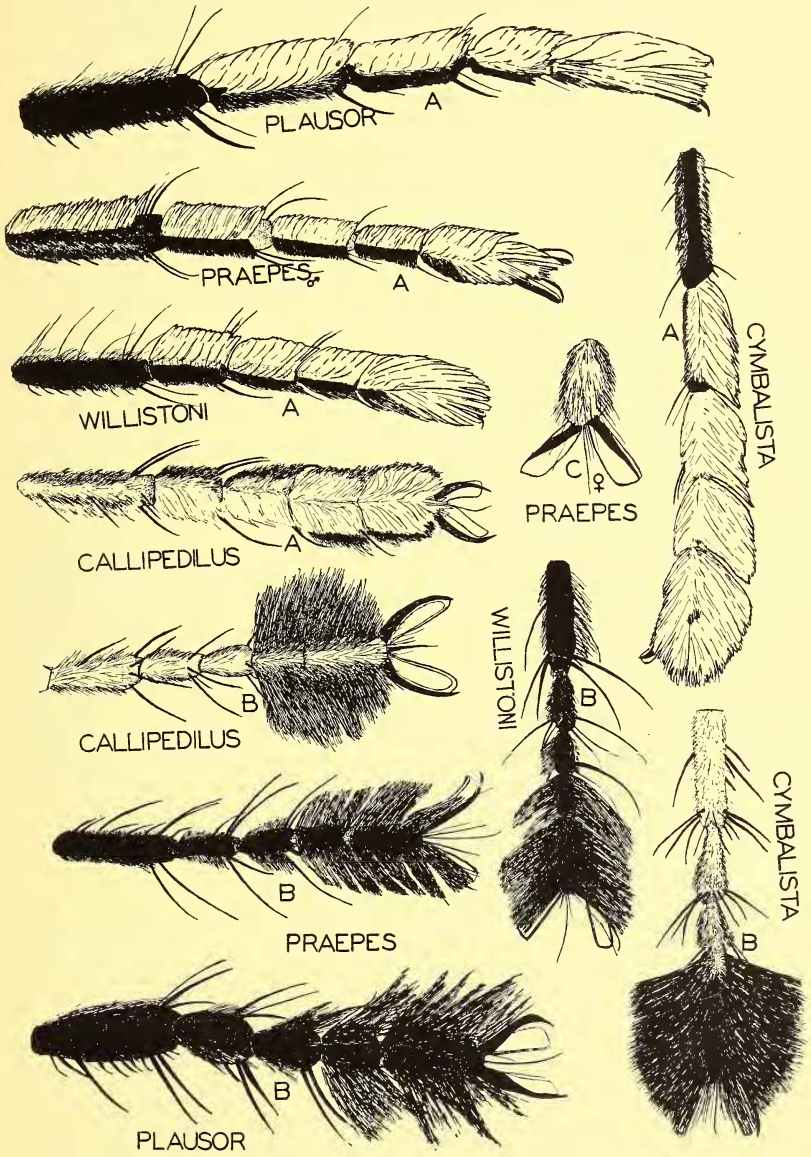
PLAUSOR
A
PRAEPES♂
A
WILLISTONI
A
CALLIPEDILUS
A
CALLIPEDILUS
B
PRAEPES
B
PLAUSOR
B
C ♀
PRAEPES
A
CYMBALISTA
WILLISTONI
B
CYMBALISTA
B

Plate III

Wings of *Cyrtopogon* Species

C. dasyllis Will.
C. **curtipennis,** n. sp.
C. sudator O. S.
C. bimacula Walker
C. maculipennis Macquart

Tarsi of Fore Legs of *Cyrtopogon* Species

C. princeps O. S.
C. **vandykei,** n. sp.
C. auripilosus, n. sp.
C. auratus Cole
C. aurifex O. S.
C. **planitarsus,** n. sp.
A, Dorsal view of tarsi
B, Lateral view of tarsi
C. lineotarsus Curran
A, Dorsal view of tibia and tarsi
B, Lateral view of tarsi

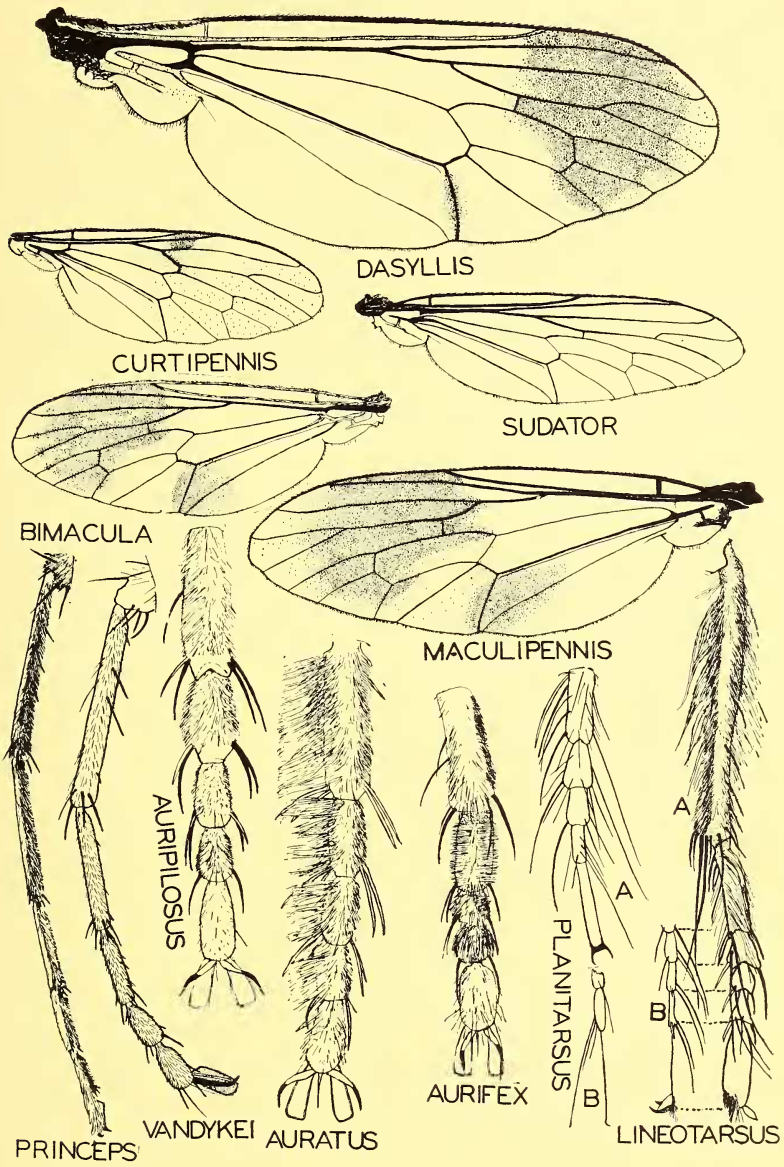
DASYLLIS
CURTIPENNIS
SUDATOR
BIMACULA
MACULIPENNIS
AURIPILOSUS
PRINCEPS
VANDYKEI
AURATUS
AURIFEX
PLANTARSUS
A
B
A
B
LINEOTARSUS

Plate IV

Antennae of *Cyrtopogon* Species

C. montanus Loew
C. anomalus Cole
C. alleni Back
C. profusus O. S.
C. ablautoides Mel.
C. **swezeyi,** n. sp.
C. evidens O. S.
C. rattus O. S.
C. tibialis Coq.
C. nitidus Cole
C. lutatius (Walker)
C. infuscatus Cole
C. **fumipennis,** n. sp.

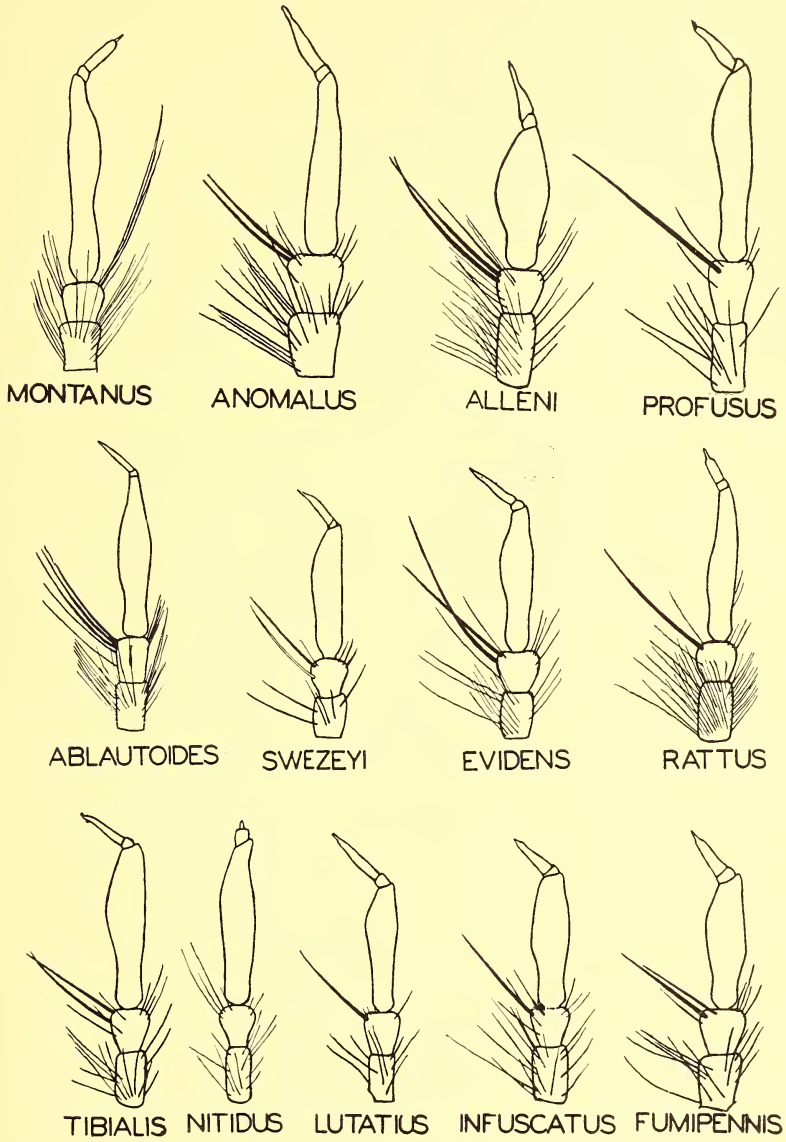
MONTANUS
ANOMALUS
ALLENI
PROFUSUS
ABLAUTOIDES
SWEZEYI
EVIDENS
RATTUS
TIBIALIS
NITIDUS
LUTATIUS
INFUSCATUS
FUMIPENNIS

PLATE V

Antennae of *Cyrtopogon* Species

C. sudator O. S.
C. **rainieri,** n. sp.
C. **curtipennis,** n. sp.
C. rejectus O. S.
C. **beameri,** n. sp.
C. **vanduzeei,** n. sp.
C. nugator O. S.
C. **albifrons,** n. sp.
C. **idahoensis,** n. sp.
C. lineotarsus Curran
C. **planitarsus,** n. sp., female
C. **planitarsus,** n. sp., male